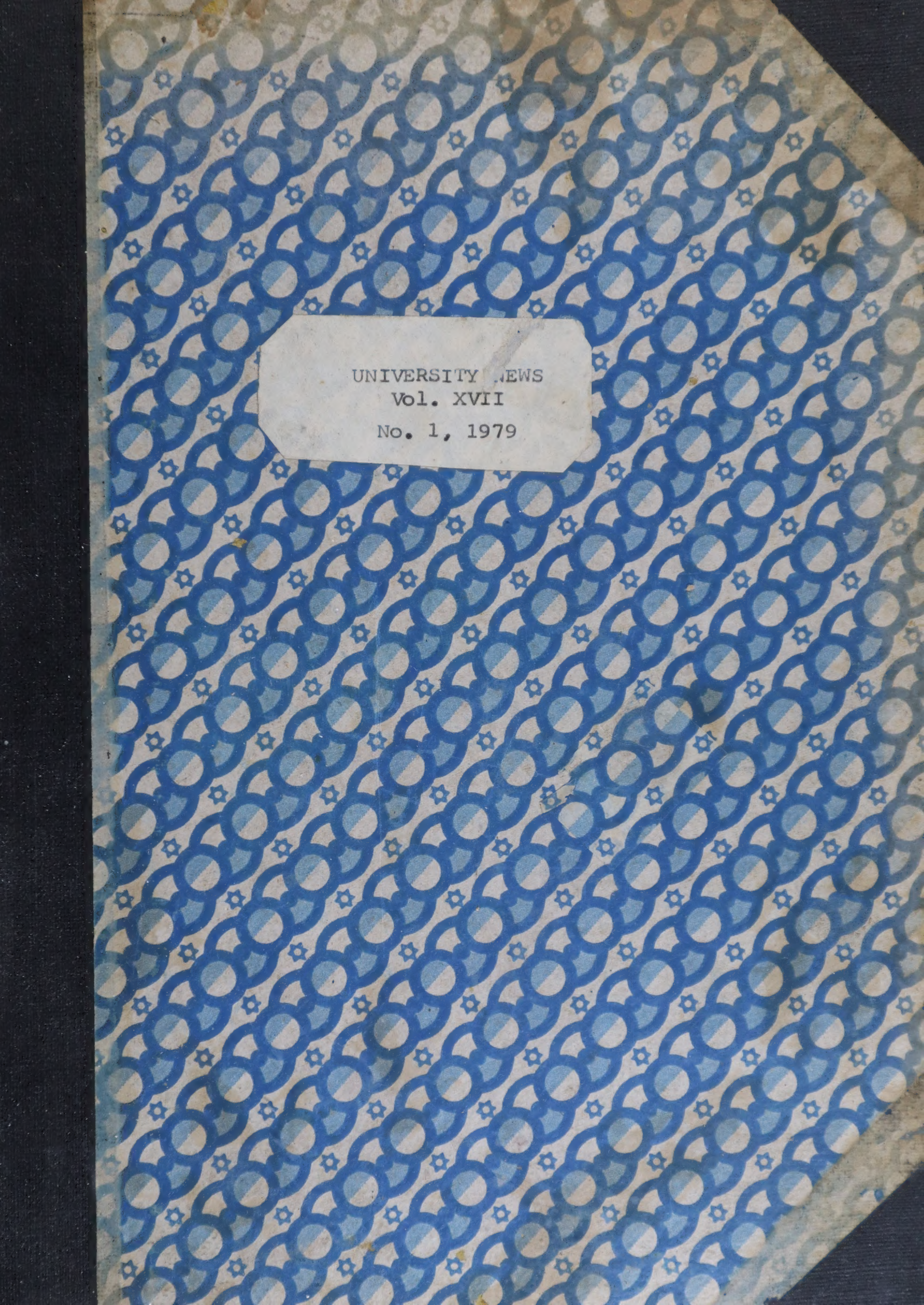




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University News

Science Congress Number



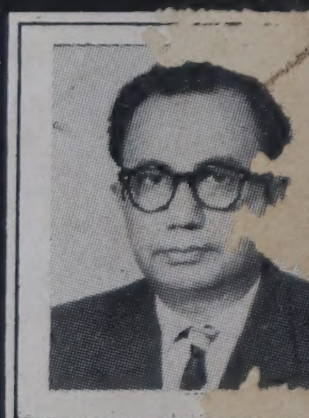
Prof. Sri Chandra



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Dr. D. K. Ray



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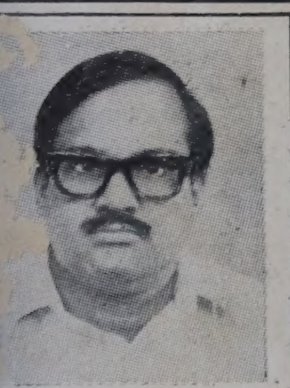
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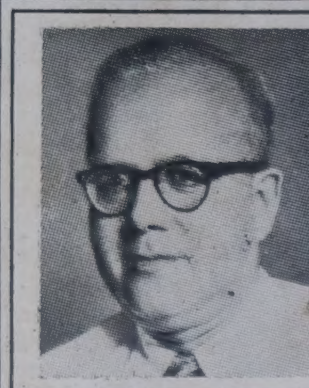
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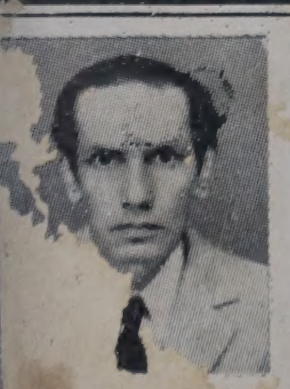
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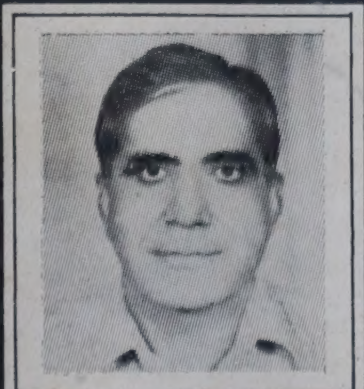
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Prof. H. S. Hans



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Prof. B. M. Das



Prof. R. S. Mithal

JAWAHARLAL NEHRU UNIVERSITY

Advt. No. Aca. III/12/78

Applications are invited for the following faculty positions in the Centre for Soviet & East European Studies of the University:

1. Associate Professor/Fellow in Soviet Studies—3
2. Assistant Professors in Soviet Studies—2
3. Senior Research Fellow in Soviet Studies—1

Qualifications for Post No. 1

Essential

- (a) Consistently good academic record with at least a high second class Master's Degree in any of the Social Sciences from an Indian/Foreign University;
- (b) A Doctor's degree or published work of an equally high standard relating to Soviet Studies;
- (c) About five years teaching and/or research experience in the field of Soviet Studies;
- (d) Knowledge of Russian Language.

Desirable

Specialisation in Economic Development of the USSR or Political System of the USSR (including Foreign Policy) or Social and Cultural change in Soviet Central Asia.

For Post No. 2

Essential

- (a) Consistently good academic record with at least a high second class Master's degree in any of the Social Sciences from an Indian/Foreign University.
- (b) A doctor's degree or published work of an equally high standard relating to Soviet Studies.
- (c) Knowledge of Russian Language.

Provided that if the Selection Committee is of the view that the research work of a candidate is evident either from his thesis or from his published work is of very high standard, it may relax any of the qualifications prescribed in (a) above.

Provided further that if a candidate possessing a Doctor's degree or equivalent research work is not available or is not considered suitable, the person possessing a consistently good academic record (weightage being given to M.Phil. or equivalent degree or research work of quality) may be appointed provided he has done research work for at least two years or has practical experience in a research laboratory/organisation on the condition that he will have to obtain a Doctor's degree or give evidence of research work of equivalent high standard within five years of his appointment, failing which he will not be able to earn future increments until he fulfils these requirements.

Desirable

Specialization in Political System of the USSR (including Foreign Policy) or Social and Cultural Change in Soviet Central Asia.

For Post No. 3

Essential

- (a) A first or high second class Master's degree in any of the Social Sciences.
- (b) A Doctorate degree or equivalent published work in the field of Soviet Studies.

Note: Preference will be given to candidates below the age of 45 years. The value of the Fellowship is Rs 600/- p.m. plus Rs. 2,000/- per annum for approved contingency expenditure. The salary of a deserving teacher-candidate selected for the award of the Fellowship may be protected upto Rs. 1,100/- inclusive of the value of the Fellowship.

Scales of Pay

1. Associate Professor/Fellow:
Rs. 1200-50-1300-60-1900
2. Assistant Professor:
Rs. 700-40-1100-50-1600

Plus usual allowances as admissible to the members of the staff in the Central Universities.

Relaxation in any of the qualifications may be made (a) in favour of persons of eminence or of high academic/professional distinction, and (b) in exceptional cases where adequately qualified persons are not available but are otherwise found suitable for the respective positions. It will also be open to the university to consider the names of suitable candidates who may not have applied.

The selected candidates for faculty positions will be expected to participate in the teaching and research programmes in the concerned discipline in other Schools of the University as well as in the programmes offered in their own Centres of Studies.

Normally appointment of Fellows is made on contract basis for a period ranging from one to three years.

Benefits of C.P. Fund-cum-Gratuity/G.P. Fund-cum-Pension-cum-Gratuity are available as per University rules.

Persons already in employment should route their applications through proper channel.

Due consideration will be given to candidates belonging to SC/ST at the level of Assistant Professor.

Second class (mail) rail fare (both ways) will be paid to candidates invited to appear for interview from outstation by the shortest route subject to the production of rail receipt.

Applications, separate for each post, on the prescribed form, obtainable free of cost from the University by sending a self-addressed and stamped envelope of 23 cm x 10 cm size to the Deputy Registrar (Academic) Jawaharlal Nehru University, New Mehrauli Road, New

Delhi-110067, should reach him latest by 7.1.1979.

Candidates from abroad, applying for faculty position, may apply on plain paper (but their applications should reach the University by the last date) furnishing all the relevant information such as their names; date and place of birth; marital status; nationality; state of domicile; postal and permanent addresses; father's name and address; academic and professional attainments, full details of (a) publications, and (b) research projects undertaken; language (s) known; details of visits to foreign countries; and the names and addresses of at least two persons well acquainted with the candidates professional work who should also be requested by the candidate to forward to the Deputy Registrar (Academic) confidential report concerning the candidate.

UNIVERSITY OF COCHIN

Tripunithura

Ad. A1. 56/78

NOTIFICATION

Applications in the prescribed form are invited from qualified candidates for appointment as Deck Officer on Rs 750-1250 in the Research Vessel of the University.

Qualification

1. Certificate of competency as first class or second class engineers of a fishing vessel issued by the Ministry of Transport.
2. 2 years' experience as a skipper in a Fishing/Research or other sea going vessel.

Age : Not more than 40 years as on 1-1-1978.

Registration Fee : Rs. 25/- (Rs 6.25 for S.C/S.T. Candidates)

The upper age limit will be relaxed by 5 years for persons belonging to Scheduled Castes/Scheduled Tribes and by 3 years for persons belonging to Backward Classes.

The application forms with further particulars can be had from the Office of the Registrar, University of Cochin, Tripunithura 682-301 on payment of Rs 2/- by cash or Money Order specifying the purpose in the Money Order Coupon. If the purpose of remittance is not shown in the Money Order Coupon it will not be accepted. The receipt of remittance should be attached to the requisition for the forms.

The candidates will have to appear for an interview if called for at the place which will be intimated later, at their own cost.

The completed applications should reach the University Office on or before 11-1-1979.

Appointment to the post will be made strictly in accordance with Section 6 (2) of the Cochin University Act 1971 (Act 30 of 1971).

C.N. Satyapalan
REGISTRAR

UNIVERSITY NEWS

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*Opinions expressed in the articles
and reviews are individual and do
not necessarily reflect the policies
of the Association*

Hony. Editor : ANJNI KUMAR

World of Science and Technology

Jagjit Singh*

The great technological advances of the first six or seven decades of the 20th century like radio, radar, atomic energy, space travel, TV, instant communication, automation electronic computers, supersonic transport, and antibiotics, to name only a few, had promoted economic growth and made affluence more widespread than ever before at any rate in the richer countries of the West, if not universally everywhere. It was, therefore, not unreasonable to hope that such growth would continue unchecked till the end of the century and beyond. Indeed, it was expected that growth would be accelerated even more by the advent of still greater technological wonders that the future would inevitably unfold.

Most technological forecasting in the past, whether fictional or otherwise, has been based on the assumption, explicit or implicit, that technology is an exogenous variable. This is to say that it has virtually autonomous laws of development operating largely independent of the social milieu. The history of Western societies since 1800 provides ample empirical warrant for it. But it is becoming increasingly obvious that the characteristics of society that produced this autonomy are now disappearing rapidly, in part because of the effects of science and technology themselves. One reason is that the intrinsic or natural rate of growth of science and technology till about the turn of the last century continued to be well below the growth in the resources of the ambient economy. As a result it was possible to exploit economically all the relatively small pieces of technology that advances in science spun off. In general what could be done was done. During the past three decades, however, the increasing industrialisation of science has tended to produce technological innovations far in excess of resources available to implement them all. Indeed, it has led to a veritable explosion of technological options and possibilities very like the population explosion of people. The number and cost of the technologies which are available for development and exploitation is now beginning to increase geometrically. Thus there appears to be a kind of Malthusian catastrophe in store for both science and technology in which natural growth presses more and more heavily on capital resources. It must be remembered that the exploitation of a technology now-a-days requires considerable capital investment way beyond the costs of research and development, heavy as they are. Hence the bottleneck is not really research and development costs, but the rate of capital investment or resource availability in the country. It is therefore likely that the death rate among exploitable ideas will rise rapidly as development effort presses more

*Kalinga Prize Winner.

and more heavily on investment rate. It seems to me that the counterpart of the well-known Malthusian checks on people's proliferation in the coming struggle of technological ideas for grabbing available resources will be a new melange of social, economic and political pressures.

Our environment is no longer considered an expendable asset for the profit of corporations and their shareholders. Consequently it is being urged more and more insistently that investments required to preserve it must be enforced. For left to the corporations who judge investments purely on a discounted cashflow basis, the planet earth simply is not worth saving. There will, therefore, inevitably prevail great tension in society as the rival views of the environmentalists and accountants struggle for supremacy.

Technologies, both old and new, will henceforth be judged not merely on their anticipated cashflows but also by the extent to which they contribute to environmental pollution. In the past technology was permitted to proliferate in response to demand which an entrepreneur could exploit for his own profit on the assumption that it was innocent unless proved guilty. Now there is increasing pressure towards shifting the burden of proof. The growth or proliferation of any technology will, therefore, be inhibited until it can be proved innocent of adverse side effects. For this reason social barriers to innovation are likely to rise very rapidly, both through direct regulation or control, and through increases in the cost of proving the innocence of technology prior to its introduction. The other side of the same environmental coin is the increasing demand for technologies which will reduce the environmental consequences of existing technology. Society will be willing to pay more for the benefits of technology through choosing more costly options which generate less pollution.

Next to ecological considerations economic considerations will prevail. Technological innovations will be selected for exploitation, at any rate in the free or capitalist world, provided a profitable market already exists or can be created soon enough. As a result technologies like holography, a super sophisticated kind of photography which are not able to find any really significant commercial market, will languish; whereas those pertaining to products of wide industrial or commercial use like metals, polymers, ceramics, or video tapes will flourish. But social and economic consideration alone will not suffice.

Technology assessment will also be subject to mounting political pressures. One cannot now-a-days talk about technological forecasts without considering several contradictory political trends which are coming into increasing conflict with each other. They are a cumulative consequence of developments during the past three decades and are source of our contemporary crisis. The problem of technological forecasting has shifted from technology itself to society, politics and economics.

However, despite the uncertainties due to these social, economic and political pressures one can see today a number of scientific and technological embryos in the making. One may therefore

legitimately attempt to figure out what they will look like in the short run of the next two decades or so always assuming—a big assumption this—there will be no third world war to bring about a catastrophic end of our crisis ridden world. It is obvious that given peace our science and technology will advance in many directions. A brief outline of likely future developments in some selected sectors may give a glimpse of the shape of things to come.

In spite of the marvels that the electronic computers perform, it is well known that they are incapable of original thought still the sole monopoly of the human brain. Will machines capable of simulating human thought such as Turing's machine playing his "imitation game" or mimicing human thought be produced by the end of the century as he predicted over thirty years ago? He based his surmise on the possibility of making computers with a memory of a billion bits as against under one million bite of the largest computer of today. Such billion-bit computers may well be the end of the century. But it is not likely that they will be able to simulate human thinking as we know it. The brute force method of making more and more powerful computers of the same kind seems to me a blind alley in so far as the search for artificial intelligence goes. There is as yet no known way of mechanising the way the human brain stores, retrieves and processes information. The human and computer's ways of performing these functions are as far apart as stars and sputniks. Nevertheless, there are very real possibilities of augmentating human mental capacities by mechanical or electrical interconnection of the brain with a computer. An early precursor of such a device is a memory aid machine described by Vannevar Bush some years ago. He called it memex.

As is well known, the digital computers have had their exciting proliferation because they could vitally aid big business and thereby increase their profits. The same pursuit of profits is now promoting another line of advance. This is the outcome of the continuing trend towards greater and greater miniaturization of computer components from vacuum tubes to transistors to silicon chips and superconducting switches called Josephson tunnelling cryotrons. It has now launched a veritable downpour of revolutionary new industrial technology consequent upon the invention of microprocessors.

Microprocessors are the outcome of a still greater miniaturization of computer components than the ubiquitous transistor. Its effectiveness will increase immensely when microprocessors are coupled with sophisticated mechanical devices to make new kinds of intelligent machines. Such coupling will give a new dimension to automation. For it seems to me that such automation in industry as presently exists is marginal compared with what is yet to come despite the universal belief that it is already widespread.

These things are not coming as profusely as they could because of the fact that while our computers are modern, the mechanical science to design and manufacture tomorrow's products is outdated. The present gap between computer engineering and mechanical technology is now being rapidly bridged

by academic research on the study of machines currently under way particularly in Japan, Germany, Switzerland, and U.S.A. The scientific base has already been created for dramatic advances in mechanical technology and its associated industrial spectrum. It has given rise to a new branch of engineering called *Robotics*.

The robotic system is in many ways the technological equivalent of the human system, having components such as sensors (eyes), actuators (muscles) and a computer (brain) which allow the system to perform mechanical functions by reacting to needs in its environment that it perceives and interprets.

One immediate consequence of the marriage of mechanical and computer technologies now in the offing will be the further devaluation of even such human skills in operating industrial and manufacturing plants as are still required for their proper operation and maintenance. The owners of such plants will henceforward be under irresistible temptation to replace their skilled operators by such cleverly designed intelligent machines.

If the movement to instal such robotic devices or microprocessors for routine industrial operation and maintenance does spread as widely as the industrial magnates would like to, it could by 2000 A.D. usher in a new age of electronic feudalism. In such a society the entire productive work of industrial society could be looked after by a small minority of population. This group will probably between 10 to 15 per cent of the population comprising scientists, technologists, educators, managers and planners upon whom the smooth working of a society based on extensive use of computers would depend. What will happen to the rest of the population is not difficult to see; a swift division of the society between the elite and the common man where the two are not even bound together by mutual usefulness, however, one-sided it might be.

It is not merely fossil fuels like oil and gas that are likely to be exhausted within a century—oil even earlier. There are a number of other important metals such as copper and nickle that are likely to be exhausted equally fast. One estimate made in the *Scientific American* a few years ago gave barely thirty years of life to the known sources of copper and only a century to nickle and cobalt at their current rates of consumption. If these rates increased under the dual pressure of economic growth in affluent countries and population explosion in the poor, their life times would be correspondingly shorter. It is, therefore, no wonder that multinational corporations of the world have already begun to cast their covetous eyes at the ocean floors as possible mining sites for such metallic ores. For the ocean floors are littered with managnese nodules from which nickle, copper and managnese may be extracted.

The way will be paved for the mining of the ocean floors on a big scale for only giant scale operations can be economically viable here. By the end of the century the churning of the oceans will be in full swing. We will thus be involving in our technological reconstruction programmes the sole remaining component of the biosphere—the ocean bed—that has

hitherto escaped such involvement. The ocean surface we have already polluted enough by oil spills to the extent that nearly half of the young fish are oil-contaminated.

Having polluted the ocean surface, it will now be the turn of its floor to be fouled up in some way. What way will it be? Will it put marine life at risk more than it already is? Will it disturb the delicate balance of the ocean-atmosphere interaction, the main motive force of our global climate? If so, will the disturbance be malign or benign? We simply do not know. All we do know at present is that the Government scientists who monitored the environmental consequences of OMI's recent operation of scooping 1000 tons of potato-sized nodules from the ocean floor and then shooting them up to the surface gave it a clean bill of health. But the bill of health is no guarantee that sea mining on the industrial scale envisaged will remain as innocuous as OMI's initial operation.

Our recently acquired knowledge of the structure of the genetic material popularly called DNA and its coding properties has now encouraged the hope that it will enable us to manipulate biological evolution to produce not only better breeds of cattle and plants but even of men as well. For whereas biological evolution has hitherto relied on random mutations and blind chance to produce the human species, the human species has now come of age to direct its own destiny by manipulating or designing the first, namely, mutations and deliberately eliminating the second, namely blind chance. Some enthusiasts have even claimed that given any pre-assigned specification for the "ideal" *Homo sapiens*, the new science or craft of genetic engineering will enable us to produce it. This is what is sometimes called playing God.

Such genetic manipulations have hitherto been confined to properties sponsored by a single gene or in a few cases at most by two genes. Polygenic characters sponsored by several genes have not yet been transferred. There are two views about such polygenic transfers. Some microbiologists like the Noble Prize Winner, Sir Macfarlane Burnet, was of the view that polygenic manipulations of bacteria might produce a virulent kind which would be new to world's populations. Nothing could be more disastrous than a "Virgin Soil" epidemic of a new bacterial disease involving the world or even a single large city. A case in point is the outbreak of a particularly vicious outbreak of influenza in Europe towards the end of world war I. It was caused by the sudden eruption of a new virus to which the European populations had not been immunized. This "Virgin Soil" influenza actually killed more people in shorter time than the war itself during its four-year long duration. The possibility of a new type of virulent bacteria and virus arising naturally is now believed to be exceedingly remote.

During the next two decades genetic engineering will be confined to the domestication of more and more bacteria for the benefit of man. Already it is possible to "command" the bacterium *E. Coli* to produce the hormone, somatostatin. In this way bacteria will be increasing turned into "factories" for

the production of more complex and useful biological proteins ranging from insulin and other hormones to the enzymes used in industrial fermentation. The insulin breakthrough would be a boon to millions of diabetics, not merely because it would be a lot cheaper but also because this insulin would be an exact duplicate of human insulin, thus eliminating the risk of allergy or antibody-rejection of the currently used pig and beef insulin.

Other anticipated rewards of genetic engineering include safer, more potent vaccines, and microbial strains capable of producing larger quantities of antibiotics, or nitrogen fixing plants, which could dispense with the use of energy-guzzling synthetic fertilizers.

Space science has yielded richer harvest of several side-line benefits. Space satellites are now launched to facilitate global communications, monitor weather, assess earth's resources by remote sensing, and other usages to which I will revert when I deal with the subject of communications. However, it does seem that the great progress that space science made during the two decades following World War II culminating in the American moon landing in July 1969 is now beginning to peter out. The reason is the great expense of all space projects.

Because of the inordinate costs of space travel, space science will during the next few decades be mainly confined to launching earth satellites and unmanned voyagers to outer planets. In fact two spacecrafts already launched by NASA in August and September 1977 will not be within reach of Jupiter to start picturing it till December 1978 and will come closest to it only in March 1979 when it will switch off the picturing. It will not encounter Neptune till September 1989, eleven years hence. Because of long times of travel even to planets within our own solar system, let alone the outer stars, which are several light years away as against a few light hours of Pluto, the outermost planet, manned flights to them will not be undertaken during the next few decades, if ever. Space science will remain restricted to launching satellites for more mundane purposes like communications, weather forecasting, geodesy, space observatories and earth resource assessment.

Space laboratories and observatories will continue to be launched to observe the celestial denizens of the universe around us like black holes, quasars, and exploding galaxies. Some of these space laboratories will also be equipped to receive signals from intelligent extraterrestrial beings supposed to exist on planets of other stars in the Milky Way. But none are likely to be received at any rate before the end of the century.

The search for extraterrestrial life seems therefore destined to draw a blank for a long time to come certainly till the end of the century.

One peaceful and very useful spin-off of space science is the present excellence of means of trans-continental communication now at our disposal. This excellence was brought about in a single *coup* when the 10th July, 1962, the National Aeronautics and Space Administration (NASA) launched the first communication satellite Telstar, into orbit.

The technique of satellite communication has since been so greatly sophisticated that it is now a significant part of global communications. The Intelsat IV Cosmat, for example, launched in January, 1971 had a capability of handling 3000-9000 telephone circuits or 12 colour television channels or a combination of both. The communication excellence of today bids fair to advance still further as we place more and more communication satellites in space, as we use laser beams to communicate with them, between them, between them and the earth. And on earth we can hook ourselves with optical fibres, instead of metal wires, and again improve things a great deal. These new technologies will enable each individual to have his own private information channel like each individual now having his own telephone number.

Communication satellites will have other more salutary uses than merely bringing to pass ORWELL's nightmare that he sketched in his 1984. They will be linked with the most pervasive aspect of technological development I mentioned earlier, namely the growing automation of production, services and information flow in the advanced economies by recourse to computers. The symbiotic growth of digital computers and orbital satellites will produce the prime ecological tools of the future through which we may, if we remain same, adjust our activities more harmoniously within the biosphere.

Satellite photographs show folds and fractures/faults in the earth's crust, that cannot be seen in their entirety from the surface or even from an aircraft. They will, therefore, be increasingly used for identifying likely sites for prospecting of oil and minerals. Identification of water resources will be carried out by satellites mapping location and size of water-shed areas, glacier movement, snow cover. Colour photography will permit correlation of biological, chemical sediments and industrial pollutant content, while infrared photography along ocean coastlines will locate escaping fresh waters. Similar techniques will prove of value for commercial fishing.

Satellite communication can also be the means of providing 'early warning' of ecological hazards that we face now but know nothing about due to increasing pollution of air, water and soil. The magnitudes of their pollution seem just about the slip beyond human grasp. But the combination of the orbital satellite and the digital computer will be the ecological tool of the future that we need to monitor the slow modifications of the biosphere by technological developments. It should then hopefully provide us with early warning to implement our anticipatory controls to avert possible catastrophes to the biosphere.

In our world, where food production is continually lagging behind baby production, food must inevitably become scarcer everywhere. It is then natural for scientific research to seek substitutes to meet the shortage besides other means of increasing the supply of natural foodstuffs. One of the most worrisome shortages in the world today is that of animal proteins, the most important item of human food. Even now its production falls short of needs by 3.5 million

tons per annum. By the year 2000 A.D., it is expected to grow to 7 million tons per annum.

Synthetic proteins may be made by combining various amino acids of which they are made. But such processes cannot as yet produce natural proteins. What they do yield is as different from animal based materials as chalk from cheese.

Biochemists have, therefore, been obliged to have recourse to semi-synthetic methods for the production of proteins. Since the ultimate origin of all animal proteins is plant, it is but natural that synthetic proteins be produced from vegetable and mineral sources. They have been produced artificially by growing biological cells or yeast on various substances after the isolation by MOBIL OIL in 1964 of an organism that oxidised methane and at the same time fixed atmospheric nitrogen making a product with a protein content between 46 and 48 per cent. Such methods produce proteins much faster than natural methods.

It appears that a protein acceptable for human use in every possible way cannot still be made even by semi-synthetic means. A complete chemical synthesis of amino acids and their polymers is, of course, still further away. Because successful basic research needed for the synthetic production of human-grade protein is still several decades away, there has arisen a new type of food research designed to achieve cosmetic effects. In the absence of real synthetic substitutes, attempts are being made to produce apparent ones. In fact, such food substitutes have already come on the market. They are designed to be closer to their more natural kins in appearance (in taste, texture & look), than in reality (in nutrient content). Since it is very difficult to reproduce both with equal fidelity, most research sponsored by food companies lays greater stress on appearance than on reality. It is not very unlike the game the Greek mythical painter, Zeuxis, liked to play when he painted grapes whose appearance is said to have seduced the birds to peck at them.

Naturally the research trend towards substitutes will not stop with meat. It will extend to other foods like fruits and vegetables as further shortages due to ever-deepening energy crisis and other reasons develop. The upshot will be prefabricated lettuce and straw berries made from real straw. They are only straws in the wind of change to indicate what varieties of rejigged foods are in the offing. All such rejigging researches are designed to produce a synthetic substitute as close as possible to its natural kin in appearance and as far from it in reality as its producer can get away with impunity. With the assured success of such projects, you will then be like Zeuxis' birds lured to peck at his painted grapes; but unlike them, you will not be able to detect the deception even after pecking!

The present tendency of plants and machines like steel plants, aeroplanes, tankers, oil refineries, etc. to grow bigger and bigger seems to have reached a dead end. Whether or not this abatement of giantism is only a temporary consequence of the global recession due to the four-fold escalation of oil prices since 1973 remains to be seen. An industrial boom

could revive it for there already exists blueprints for making million-ton tankers for carrying crude oil and million-pound planes to carry passengers and cargo. The unfortunate Torrey Canyon that by its wreck spread such pollution on the high seas and coastal beaches was in comparison a mere midget.

As J.D. Bernal has predicted, by the end of the century atoms and molecules should be as manipulable as were levers, cogwheels and cylinders in the 19th century. As a result the older and cruder chemical processes of separation and transformation by reduction, oxidation, etc. will give way to more sophisticated techniques of two new disciplines called molecular engineering and bionics.

The coming decades will also require materials able to survive as well as function in new environments which until recently we hardly bothered about. Some of these new environments we can presently envision in some detail are: outer space, the ocean depths, the human body, the outer planets. These new environments create problems by virtue of their novel characteristics which in turn require properties or combinations of properties different from our normal experience.

We seem, however, to be now at a point where broad-scale replacement of human parts will be commonplace. It will not be confined to just structural parts like limbs and organs like heart. It will also include membranes, tubing, tissue, sensors and power sources as well. This aspect of medical engineering is fraught with many difficulties partly because of the enormous complexities of the internal environment of the human body and partly because of a number of special problems arising out of insertion of foreign materials within the human body.

There are a wide variety of waste products, like raw sewage, certain types of potatoes and other allied substances that are dissolved daily in limitless quantities in the oceans. These materials are already being used to generate enough power to operate such simple devices as signal lights. But they might well be precursors of bigger packs of biopower which may propel ships and even provide cities with electricity in due course.

Biochemical insights are also suggesting ways of duplicating the extremely refined sensory mechanisms of animals and plants.

The great importance of cryogenic engineering stems from the fact that it is the only way of materialising—if ever we do—the two great miracles of our science and technology—fusion power and room temperature superconductivity. One to generate putatively unlimited energy and the other both to produce it in the first instance and then to transmit it without any loss whatever. Both are dreams at present and no one knows whether they will materialise. But if they ever do, both together will suffice to solve almost all our present predicaments.

Our current energy crisis is unique. It is the first time in history that the entire civilized world is threatened by the exhaustion of our fossil fuel resources—first oil to be followed by coal and gas—within the next 50 to 100 years. Till a few years ago reliance

(Continued on page 14)

66th Science Congress

The 66th annual session of the Indian Science Congress Association is being held at Osmania University, Hyderabad from January 3 to 7, 1979.

About the Sectional Presidents whose photographs appear on the cover page.....

Prof. R. C. Mehrotra, General President, 66th Indian Science Congress, was born on February 16, 1922. He is at present Vice-Chancellor of University of Delhi. After completing his university education with distinctions, Prof. Mehrotra held the teaching assignments for thirtyfour years at the Universities of London, Western Ontario, Allahabad, Lucknow, Gorakhpur, Rajasthan and Delhi.

Prof. Mehrotra's research interests have been very wide but the following six broad areas deserve mention : (i) Adsorption indicators, (ii) Redox titrations, (iii) Complex metaphosphates, (iv) Organic derivatives specially alkoxides, carboxylates and B-Diketonates of metals and metalloids, (v) Organometallic chemistry, and (vi) Chemistry of Lanthanons.

Prof. Mehrotra held the following academic and administrative assignments: Chief Warden and Dean of Science, Gorakhpur University (1958-62); Dean of Science, Chief Rector and Vice-Chancellor, Rajasthan University (1962-73); Member of: Enquiry Committee of the BHU, 1968-69; Education Commission, Gujarat, 1970; Higher Education Committee, Bihar, 1974; UGC Review Committee, 1974; Indian National Commission for UNESCO, 1974; UNESCO Advisory Panel on relationship between Universities and Industry, 1975; Commission for Scientific & Technical Terminology; Sports Council of India; Governing Body

of the CSIR; Inorganic Chemistry Division of the International Union of Pure and Applied Chemistry (IUPAC); President, Indian Chemical Society, 1976; Chairman, World University Service since 1975; Vice-President, Indian National Science Academy, 1977-79.

Prof. Mehrotra was invited to give the main lecture on 'Heavy Metal Soaps' at the VI International Conference on Lubricants held at Jena in 1964. He presided over the sessions of the International Coordination Chemistry Conference held at Uppsala, Vienna, St. Moritz-Bad, Moscow, Sao Paulo and Prague in 1962, 1964, 1966, 1977 and 1978. He was invited to present an account of his researches at the Rare Earth Research Conference at various centres in USA and USSR in 1967, 1969, 1972 and 1973. He was invited to present a paper at the International Symposium on Decomposition of Organometallic Compounds held at Dayton (USA) in 1967. Prof. Mehrotra spent three months in Canadian institutions in 1967 under the commonwealth fellowship plan. He was invited by the National Science Foundation to study the US pattern of education and research in 1969. He was invited to contribute papers at the Vth and VIth International Conference on Organometallic Chemistry held in Moscow and Amherst (USA) in 1971 and 1973. He attended the Commonwealth Universities Conference at Sydney, Edinburgh, Wellington and Vancouver as a member of Indian

Universities delegation. He was invited to present a paper on Adsorption Indicators at the Gesellschaft Deutscher Chemiker, Cologne, in 1951. He attended the International Congress on Analytical Chemistry at Oxford in 1952. Professor Mehrotra was invited to present his work in the above fields at the IUPACE meetings held at Paris (1957), Munich (1959), Montreal (1961) and Munich (1973); the International Conference on Inorganic Polymers at Nottingham, 1961; Gordon Research Conference in USA, 1961 and several University and Industrial Research Laboratories in UK, USA, Europe, Japan and Hong Kong in 1961, 1964, 1965, 1967, 1969, 1973, 1975, 1976 and 1977.

Prof. Mehrotra attended the Centennial Celebrations of the American Chemical Society in his capacity as the President of the Indian Chemical Society in April 1976. He led the Indian Delegation to USSR for a Conference on the role of State in Economic and Technological Development in October, 1976. Prof. Mehrotra represented the country in the XVI Biennial Conference of UNESCO at Nairobi in November, 1976. He was invited to give one of the main lectures at the XVIII International Conference on Coordination Chemistry at Sao Paulo, Brazil in July, 1977.

Prof. Mehrotra is a fellow of the three Academies of Sciences in the country. He was awarded: E. G. Hill Memorial Prize of Allahabad University in 1949 for

the best research work in the Faculty of Science, Sir S. S. Bhatnagar Award in 1969 for outstanding research work, FICCI Award for his outstanding achievements in research in Science and Technology in 1975, Prof T.R. Seshadri 70th Birthday Commemoration Medal (1976) for his research work in the field of Chemistry, Honorary D.Sc. by the University of Meerut, in 1976. He was elected President of the Chemistry Section of the Indian Science Congress in 1967 and President of the Indian Chemical Society for 1976-77.

Prof Mehrotra is the Honorary editor of the Journal of the Indian

Chemical Society and is a member on the Editorial Board of the Indian Journal of chemistry and the proceedings of the Indian National Science Academy. He is also one of the editors of the Indian Journal of Chemical Education. He has been the editor of the first review journal of chemistry in Hindi published by the Rajasthan Hindi Granth Academy since 1973. He has been invited to serve on the international editorial board of the journal 'Review on Silicon, Germanium, Tin and Lead Compounds.' His work has been mentioned almost regularly in the Annual Reports of the Progress of Chemistry published

by the Chemical Society, London.

Prof. Mehrotra has published about 500 research papers and reviews. He has written among other books—the first textbook of Physical Chemistry for undergraduate classes in Hindi. He has guided about seventy scholars, sixty of whom have been awarded doctorate degrees. His two treatises on (i) Metal Alkoxides with about 1200 references and (ii) B-Diketonate and Allied Derivative of metals with about 1900 references are under print and are being published by Messrs Academic Press, London. He has now undertaken to write a treatise on Metal Carboxylates.

Prof. Dilip Kumar Sinha, President, Section of Mathematics, 66th Indian Science Congress, was born in 1939. He is at present Professor and Head of the Department of Mathematics at Jadavpur University. He obtained his doctorate degree from Jadavpur University in 1964. He started his career as a teacher, first with a brief spell of few months in a college, after which he moved over to Jadavpur University in 1960. He initiated further study and research under the guidance of late Prof. Bibhutibhusan Sen, a doyen in Mathematics in 1960. His research papers numbering one hundred and five and those of his research students numbering over two hundreds, have appeared in a number of reputed journals of India and abroad. He became Professor and Head of the Department of Mathematics in 1971. Some of his recent research areas are Systems Analysis, Biomathematics, Mathematical Ecology, Mathematical Bioeconomics, Mathematical Learning Theory, Mathematics Education and Catastrophe Theory. His research supervision has resulted in

twenty-six doctorates. He has organised several research seminars, symposia, workshops. The first all-India advanced level Summer Institute in Biomathematics under the auspices of UGC was held under his direction. His book 'Mathematical Theory of Electricity and Magnetism' is an outgrowth of the UGC book-writing project which he supervised with a fellow who is the co-author of this book. He is at present working with a similar project for a book on 'Concepts and Techniques in Applicable Mathematics'. He was the Editor for eight years of 'Indian Journal of Mechanics and Mathematics'. He is on the Editorial Boards of the journals 'Pure and Mathematical Sciences', 'Acta Ciencia Indica', 'Mathematical Forum', 'Indian Journal of Theoretical Physics', 'Indian Journal of Mathematics Teaching', 'Indian Journal of Mathematics Education', 'Bulletin of Mathematical Association of India', 'The Mathematics Education' and 'The Mathematics Teacher'.

Dr. Sinha was elected a Fellow of the Institute of Mathematics

and its Applications of UK in 1969. He is also a Fellow of Acoustical Society of India and of Institute of Theoretical Physics. He is connected with various mathematical organizations in different capacities. He is Director of NCERT Study Group in Mathematics.

The regional conferences held under the auspices of UGC as a follow-up of Binational Conference on Mathematics Education and Research, and the other under the auspices of NCERT on ten-year school curriculum, were organized by him. He is the President of Association for Improvement of Mathematics Teaching and Vice-President of Association of Mathematics Teachers of India. He had been to UK, USA, FR Germany for a couple of times, under various programmes. He participated in Second and Third International Congresses in Mathematical Education in 1972 and 1976. He participated in International Conferences on Ultrasonics International and Applied Numerical Modelling in 1977.

Prof. Sri Chandra, President, Section of Psychology and Educational Sciences, 66th Indian Science Congress, was born in 1914. He received D Litt. degree from Agra University in 1967.

Dr. Chandra joined Darbar College, Rewa in 1938 and became Professor and Head of the Department of Philosophy on July 1, 1944. He was appointed Professor and Head of the Department of Psychology at University of Lucknow in 1965/1972. He is at present UGC Professor of Psychology at Aligarh Muslim University under the 'retired teachers scheme' since July 1976.

Dr. Chandra has published a large number of papers in research journals. He has worked as Director of several research projects under the auspices of CSIR, Research Programmes Committee of the Planning Commission, Home Ministry and ICSSR. His

book on "Scientists: A Social-Psychological Study" was published in 1970 and his monograph on 'Tension in the Youth' came out in 1971. He was invited by the President of International Association of Applied Psychology to participate in the Symposium on 'Psychological Studies and problems of developing countries' held at Liege (Belgium) in July 1971. He received an invitation from the British Council to visit the laboratories and departments of psychology of the Universities of Oxford, Cambridge and London. At the XXth International Congress of Psychology held at Tokyo in July-August 1972 he participated in the Symposium on "Cross-cultural studies of Subjective culture applied to economic development". He presented a paper on 'National Integration at XVIIIth International Congress of Applied Psychology held at

Montreal (Canada) in July, 1974. He was sectional President at the 2nd International Conference of Cross-cultural Psychology held at Kingston. He presided over one of the panels at the 4th International Congress for the Scientific Study of Mental Deficiency held at Washington, D.C. He was invited by Prof. Aaron Armfield, Program Director to be the Co-Chairman of panel 28 of World Congress on Future Special Education held at Stirling University, Scotland.

He is a member of the Indian Science Congress Association, Indian Psychological Association, International Association of Applied Psychology, and International Council of Psychologists. He worked as Recorder of Psychology and Educational Sciences Section of ISCA in 1967 and area Co-Chairman of International Council of Psychologists in 1975.

Prof. A.B. Biswas, President, Section of Chemistry, 66th Indian Science Congress, was born in 1917. He had his university education at Dacca and obtained his M.Sc. degree in 1940 with first class position. He joined for research at the Indian Institute of Science, Bangalore. He received his Ph.D. degree in 1945. An award of a Government of India Scholarship enabled him to join as Research Fellow at the California Institute of Technology, USA in 1948 and to work in the research group of Professor Linus Pauling on 'Crystal and Molecular structure determination of amino acids and peptides', building units of protein molecules. He worked as a Lecturer in Chemistry in Delhi University (1945-50), Senior Scientific Officer, Assistant Director and Head of the Division of Physical Chemistry, National Chemical Laboratory, Poona (1951-67). He is working as a Senior Professor in the department of Chemistry, Indian Institute of Technology, Bombay since 1967.

Prof. Biswas has published more than 150 research papers and reviews and has guided more than 50 students who have obtained their Ph.D. degrees. His major research interests are in the areas of crystal and molecular structure determination by X-ray and neutron diffraction; surface Science and Catalysis; monolayer properties of long chain compounds on water surface; chemistry and physics of semiconductors, magnetic and ferroelectric materials; and photo and radiation polymerizations. He has built up a strong school of research in chemistry and physics of the solid state and materials science.

Prof. Biswas has taken considerable interest in the introduction of innovations in teaching techniques, design and development of new courses and curricular with a strong emphasis in basic science, keeping in view of the "New Horizons in Chemistry" and interdisciplinary philosophy relevant to the needs of Indian universities.

Prof. Biswas is a Fellow of the Indian National Science Academy, Indian Academy of Sciences and Indian Chemical Society. He is also associated with many Teaching and Research Advisory Committees; Visiting Committees to universities to evaluate and plan for development of universities; Panel of Chemistry for project grants, research and curricular development activities; Scientific Advisory Panel of several CSIR laboratories; Materials Science Committee of the Department of Atomic Energy; Panel of the Indian Standards Institution; Member on Editorial Board of several scientific journals including the membership of the Panel of Physico-chemical measurements and standards of the International Union of Pure and Applied Chemistry; Convener of the Committee for Conservation and Utilization of water resources and member of the High Power Committee on Science and Technology, Government of Maharashtra.

Dr Rabindranath Sen, President, Section of Physiology, 66th Indian Science Congress, was born in 1931. He started research in the field of Work Physiology from 1953 as a student of Prof. Sachchidananda Banerjee and was awarded a first class M.Sc. degree in Physiology in 1954. He continued his pioneering research in this field both in fundamental as well as applied aspects pertaining to industrial workers for several years and was awarded a D.Sc. degree in Physiology by the Calcutta University in 1961.

Dr. Sen was invited by Prof. E. H. Christensen, an ILO expert in Work Physiology in 1962, to work with him in the Central Labour Institute, Bombay as Assistant Chief Adviser of Factories (Physiology) and Head, Industrial Physiology Division of that Institute. He undertook pioneering researches in Industrial Phy-

siology and Ergonomics in several types of industries. He went to the University of Technology, Loughborough, Leicestershire in England in 1967 to work with Prof. W. F. Floyd in the Department of Ergonomics and Cybernetics. His studies included improvement of physiological performance and evaluation of training programme for Olympic athletes weight-lifters, oarsmen, marathon runners, cyclists, etc, development of new technique for the evaluation of the total muscular activity of the whole body, preparation of norms for energy expenditure etc. He visited more than fifty universities and institutions undertaking researches in Work and Sports Physiology Ergonomics in USA, Canada, UK, France, West Germany, Switzerland, Czechoslovakia, Holland, Italy and Thailand.

Dr Sen has attended more than twenty International Conferences

and Symposia including those organised by UNESCO, WHO, ILO, NIOSH held in India and abroad. He joined the Department of Physiology, Calcutta University in 1970. He organised M.Sc. study programme on Work Physiology and Ergonomics in the Calcutta University. This was the first time in India that such a postgraduate programme in Ergonomics was initiated.

Dr. Sen is a regular member representing India in the International Committee for Physical Fitness Research. He is also a member of the Ergonomics Society and British Nutrition Society, UK, a Member of the Physiological Society of India and a Fellow of the Institution of Instrumentation Scientists and Technologists, (FIIST). He has published more than ninety papers in different aspects of Physiology in reputed Journals of India and abroad.

Dr. V.G. Jhingran, President, Section of Zoology, Entomology and Fisheries, 66th Indian Science Congress, was born on June 18, 1919. He is at present Director, Central Inland Fisheries Research Institute (ICAR), Barrackpore. He obtained M.Sc. degree in Zoology from the Banaras Hindu University in 1941 and did his Ph.D. in freshwater Fishery Biology in 1948 from Stanford University (California), USA. He was elected Fellow of the National Academy of Sciences of India in 1969 and Fellow of the Zoological Society of India in 1970. He is the President of the Inland

Fisheries Society of India. He is the Founder Fellow of National Institute of Ecology.

Dr. Jhingran was awarded Rafi Ahmed Kidwai Memorial Prize by the Indian Council of Agricultural Research, for his outstanding contribution in the field of fish culture jointly with two other scientists of the Central Inland Fisheries Research Institute in 1976. His work on composite fish culture of carps and on brackishwater prawns and mullet present new concepts in inland aquaculture and have been of practical importance.

Dr. Jhingran has so far published 91 research papers. He has written a technical book—'Fish and Fisheries of India' which is the first book in the field. He has written another book jointly—'Coldwater Fisheries of India' which is in Press.

Dr. Jhingran was UN/FAO Consultant on Aquaculture in Sri Lanka; World Bank Consultant in Aquaculture to World Bank Mission II for agricultural research in Indonesia; and also the Ministry of External Affairs Adviser for Aquaculture Development to the Government of Guyana, South America.

Dr. D.K. Ray, President, Section of Medical and Veterinary Sciences, 66th Indian Science Congress, was born on January 31, 1925. He obtained his M.Sc. degree in Zoology from the University of Calcutta in the year 1947. He joined the Indian Veterinary Research Institute, Mukteswar as an honorary Research Scholar to do his D.Phil degree of the University of Calcutta. He obtained his D.Phil degree in the year 1960, after his return from abroad. Dr. Ray proceeded to UK in 1952 to do his research

in Veterinary Science from the University of Bristol. After obtaining his degree in tropical veterinary medicine at Edinburgh, he joined Bengal Veterinary College. He worked there as Professor of Clinical Veterinary Medicine, a post which he held till he joined CIBA-GEIGY Research Centre at Bombay as a Scientist Parasitologist in 1968.

Dr. Ray published the first authentic report describing the presence of *Ancylostoma ceylanium* in dogs in India after almost 50 years since Chandler (1926) made

a casual reference of its presence in the dogs. Dr. Ray discovered that there was a natural take of this parasite in golden hamsters, *mesocricetus auratus*, a laboratory animal thus making it a very useful biological tool for many indepth studies. He was able to develop a very useful dual infection model in golden hamsters by a simple and extremely novel technique.

Dr. Ray is the pioneer of researches in Tissue therapy in India.

Prof. R.S. Mithal, President, Section of Geology and Geography, 66th Indian Science Congress, was born on June 5, 1919. He studied for the B.Sc. and M.Sc. (Geology) degrees at the Banaras Hindu University. He worked for two private firms during 1941-44 and surveyed the calcareous Marl deposits in UP, discovered and mapped several china clay bauxite, fireclay, and glass sands, limestone and wollastonite etc. deposits in Chota-Nagpur (Bihar). Later in 1943-44, he mapped the then existing working antimony mines in Chitral and discovered several lead bearing veins in the Arki region at the foot of Mount K₂. He worked as the founder Lecturer in Geology at the St. Xavier's College, Ranchi during

1944-45 and shifted as a Lecturer to Banaras Hindu University in July 1945. He was awarded the Holkar Fellowship for higher studies under Prof. H.H. Road, F.R.S. at the Imperial College of Science and Technology, London. He received the D.I.C. and the Ph.D. degree of the London University in 1952.

On his return to BHU he taught structural geology, petrology, economic geology, mineral deposits, Engg. geology and Photogeology to the postgraduate classes till December 1956 and also studied the Mylliam granite and Sillimanite deposits of Assam and Rewa and the Limestone, Wollastonite and Kyanite deposits of Bihar which have proved of

much commercial importance. He joined the Oil and Natural Gas Commission as a Senior Geologist in 1957. He left ONGC in 1958 and joined the University of Roorkee. Dr. Mithal was declared as the foundation professor and the first head of the department of the University in 1962.

Prof. Mithal is a member of several scientific societies and has visited UNESCO, Yugoslavia, USSR, Australia as a delegate. He is a founder member of the International Association of Engg. Geology and was a member of the National Committee in Geology (1969-1972). He is a member of many academic bodies in several universities, CSIR, NCST, UGC and other state and central organisations.

Prof. B.M. Das, President, Section of Anthropology and Archaeology, 66th Indian Science Congress, was born in April 1933 at Gauhati. He obtained M.Sc. degree from Calcutta University in 1953, Ph.D. in 1959 and D.Sc. in 1973. He joined as Lecturer in Cotton College, Gauhati, where he served for two years. He joined Dibrugarh University as Professor and Head of the Department of Anthropology in 1973. He joined as Professor in Gauhati University in 1976 where he is working at present. Prof. Das did post-doctoral research as an Alexander von Humboldt Fellow in Institute fuer Anthrologie der Freien

Universitat Berlin during 1968-70. He revisited West Germany to work in Hannover and Hamburg in 1975.

Prof. Das has to his credit about 100 research papers and notes published in various Indian and foreign journals in English, German and French languages. He has published five books in English. Besides, he has to his credit seven Assamese books on anthropological topics meant for children and general readers. He edited one illustrated children's Science Encyclopaedia in Assamese in four volumes and some other publications including science

journal and science magazine.

Prof. Das has done extensive research on different aspects of physical anthropology of the various populations of North East India. His main contributions are in the field of biological variation and micro-evolution and also in Haemoglobin E. He has directed several research projects. He is a life member of almost all the anthropological societies of the country. He was president of Anthropological Society of North-east India and Northeast Science Society. He is a member of several international anthropological societies.

Prof. S.B. Saksena, President, Section of Botany, 66th Indian Science Congress, was born in 1917. He passed his M.Sc. from Agra University securing first position in order of merit. He joined as Botanist in the Agriculture Department and helped in the development of wilt resistant cotton varieties. After a couple of years he joined as a lecturer in the Victoria College, Gwalior and in 1948 settled down as a teacher in the Department of Botany, University of Saugar. Prof. Saksena got interested in the study of soil fungi and discovered a large number of new genera and

new species. This fungus proved to be of immense pathological importance as it was reported to be causing virulent zygomycosis in humans.

Prof. Saksena worked in England in association with Prof. S.D. Garrett, FRS. He worked on the ecology of *Trichoderma viride* which was an antagonistic fungus against several disease organisms specially *Armillaria mellea* when soils were fumigated with carbon disulphide.

Prof. Saksena is a fellow of the Indian National Science Academy, National Academy of Sciences,

Indian Botanical Society and several other bodies. He has published about hundred research papers and more than thirtyfive students have been awarded Ph.D. degree under his guidance. He was elected President of the Indian Botanical Society (1971), Indian Phytopathological Society (1975) and the Mycological Society of India (1978). He has been a member of the Executive Council of Saugar University and Dean, Faculty of Sciences and Faculty of Life Sciences. After his retirement in 1978 he joined the Jiwaji University as a Visiting Professor.

Dr. A. B. Ghosh, President, Section of Agricultural Sciences, 66th Indian Science Congress, was born in October 1924. Dr Ghosh joined the Indian Agricultural Research Institute, New Delhi in 1946. He earned a Doctorate in Soil Sciences and Agricultural Chemistry during his service career. During the last 32 years at the IARI, he held several research positions. He is at present senior soil scientist in the division of Soil Science and Agricultural Chemistry since 1971. He has also an additional assignment as the Principal Investigator (Project Coordinator) of the All-India Co-ordinated Programme on Long

Term Fertilizer Experiments of the Indian Council of Agricultural Research.

Dr. Ghosh has been actively associated with research and post-graduate teaching programme in various branches of soil science with special reference to soil fertility and fertilizer use. His present major involvement is in research, development and technical co-ordination of soil testing programme in the country including soil fertility, evaluation and management. His most recognized achievements have been in the field of land productivity evaluation under continuous and intensive cropping systems and the

preparation of soil fertility maps of the country on the basis of millions of soil test results emanating from the soil testing laboratories.

Dr Ghosh has a long association with the teaching of several subjects in the discipline of soil science and agricultural chemistry. He has guided and supervised the research work of nearly a score of postgraduate students, one-half of them having been duly admitted to the Doctorate degree. He has represented the IARI/ICAR on a number of expert bodies like the Fertilizer Association of India and the Indian Standards Institution.

Prof. J. Medhi, President, Section of Statistics, 66th Indian Science Congress, who was born in 1925 is at present Senior Professor and Head, Department of Statistics, Gauhati University. He took his Master's Degree in Pure Mathematics from Calcutta University, Master's Degree in Statistics from Manchester University and his Doctorate from University of Paris in 1956. Since 1949 he has been teaching in Postgraduate Mathematics & Statistics Department in Gauhati University, having been appointed Professor of Statistics in 1963 and Senior Professor in 1973.

Dr. Medhi was a Visiting Professor at the University of Montreal, Canada, for one and half years during 1967-68. His first research paper appeared in 1955. He has since published numerous papers which have appeared in journals such as *Biometrika*, *Skend*, *Aktuar*, *Ind. Statis. Assoc.*, *Metrika*, *Management Science*, *Cahiers due Centre d'etude de Recherche Operationnelle*, *Sankhya*, *India J. of Meteor.* and *Geophy.* etc. His current research interests are applied probability, Stochastic Processes with special reference

to Queueing Processes and Time Series.

Apart from teaching and research, Dr. Medhi has successfully organised a number of projects and sample surveys at the instance of various organisations. Dr. Medhi will also work as Director of the Demographic Research Centre which is being set up by the Ministry of Health & F.W., Govt. of India. Dr. Medhi has made significant contribution towards building a strong centre of theoretical research as well a centre for applied statistical work.

Prof. Harnam Singh Hans, President, Section of Physics, 66th Indian Science Congress, was born on November 21, 1922. He is Head of the Department of Physics, Panjab University, Chandigarh.

Dr. Hans did his M.Sc. from Banaras Hindu University and Ph.D. from Aligarh Muslim University in 1956. He had been teaching and doing research at Banaras Hindu University and Aligarh Muslim University and Bartol Research Foundation Swarthmore, USA, Texas A and M University, USA and Argonne National Lab. Argonne, USA.

He has also visited USSR and University of Birmingham for short visits.

Dr. Hans has been engaged for the last 20 years in the field of experimental nuclear physics. This led him to develop a Cock-Croft Walton Accelerator at Aligarh Muslim University in 1958 and now a Variable Energy Cyclotron in Chandigarh. He has also used, in this period, the reactors at Argonne National Lab. and BARC as well as Van-de-Graaff at Bartol Research Foundation Swarthmore. He has been engaged in experiments connected with slow and fast neutron cross sec-

tions and neutron-induced reactions like (n,p) , (n,n') and (n,n) to understand the reaction mechanisms. The life times of excited states of various nuclei were measured through resonance scattering of neutron capture gamma-rays. The nuclear spectroscopy involving angular correlation and conversion coefficients has been another activity. Dr. Hans is now involved in hyperfine fields using differential Perturbed Angular Correlation techniques and Mossbauer Spectroscopy. Dr. Hans has thirty-two publications and has read one dozen papers at the various national and international conferences.

Dr. S. Deb, President, Section of Engineering Science, 66th Indian Science Congress, was born on March 1, 1921 and had his higher education at the Scottish Church College and the College of Science, University of Calcutta. He obtained first class M.Sc. in Physics with specialisation in Electrical Communication and carried out research work under the late National Prof. S. K. Mitra, F.R.S. obtaining the D.Phil degree in 1955. He went to the University of Manchester for advanced training in Vacuum Tube Technology in 1957. He joined Jadavpur University as

a Professor of Electronics and Telecommunication Engineering in December 1961 and was appointed a Senior Professor there in 1971.

His researches cover the fields of Electrical Discharge in Gases, Physics of the Upper Atmosphere and Electronic Devices. Apart from setting up the First Pilot Plant in the country for work on Vacuum Tubes his efforts in the field of Semiconductor Devices provided the impetus for the growth of active Schools on this topic at Calcutta and Jadavpur. His current interest centres round solar photovoltaic energy con-

version. He is the author of over 65 research papers and inspirer of many more.

Prof. Deb travelled extensively in Europe and the USA during 1957, 1960, 1971 and 1975. He is a Fellow of the Indian Physical Society, a Chartered Engineer, a Member of the Institution of Electrical Engineers, Indian Science Congress Association and International Solar Energy Society. He was a member of the Programme and International Activities Committee of the International Solar Energy Society in 1975-77.

World of Science and Technology

(Continued from page 7)

was placed on nuclear energy either by fission of heavy atomic nuclei like uranium, or by fusion of light nuclei such as deuterium and tritium to replace our dwindling supply of oil, coal and gas. But the pollution hazard of nuclear energy via fission has led several knowledgeable critics of nuclear energy to advocate "putting the nuclear genie back in the bottle before it puts us in our caskets." One of them A. mory B. Lovins, considers it "a pre-requisite for everything else and the most urgent issue of this or any age".

Several energy options have been suggested. They are solar, geothermal, tides and even winds. Both tides and winds are readily shown to hold little promise. Geothermal and solar energy are potentially unlimited sources but the technology for the former is as yet rudimentary. Solar energy is clearly around and may well be useful for heating houses. But it is very doubtful as to whether solar energy for the generation of large amounts of electric power will be economical within a century.

In view of the rapid depletion of our fossil fuel resources and absence of any other feasible alternative in the next few decades, it is now being realized that we have just about reached the limits of conducting our lives in the same old way even if we have not yet reached limits to growth as Meadows suggested in his First Report to the Club of Rome.

Poised as we are at this turning point or cross-roads of our history, in which direction will we move—continue on our collision course with catastrophe or move away from it? If we are to move away from it,

we must resolve the central problem of our time I mentioned at the outset. That is, "we must first develop the intellectual tools to formulate technologies which we should adopt to manage and improve our complex societies and then create the consensus as well as organizational structure to implement them". This is quite a tall order. But it is not beyond the cumulative wisdom of our world to formulate at least a theoretical solution to our present predicament, which I may call the survival technology of our times. Whether this survival technology, if and when formulated, will be implemented is another matter. For whatever its detailed blueprint, and it will be quite complex, its implementation will require two hard basic decisions both of which lie outside the realm of science and technology.

The depleting fuel resources and exploding world population will continue to accentuate existing pressures and tensions both within and between nations making our world much poorer by the end of the century than it is today. By then and within the first few decades of the next century the numbers of mankind will have so increased and the world resources so depleted that Natural Selection will return to the place it used to occupy before the advent of the Industrial Revolution two centuries ago, when it was the chief control in the lives of our ancestors. Life will be hard for many and many will fail to survive, not only individuals but whole communities. In the continually accentuating struggle for survival men will have ever-diminishing energy to spare for the sort of genetic engineering, space exploration, and other technological feats I have described. It will be a life that many of us, accustomed as we are to our present surroundings, would very much dislike. But our descendants will be conditioned for it and I do not believe that their lives will be any unhappier than those of the teeming millions of the Third World today. [Excerpts from the Sardar Patel Memorial Lectures]

UN Varsity in Financial Straits

Palu Harrison

Three years after it was set up, the United Nations University (UNU) has made steady progress in focussing worldwide scientific and scholarly resources on a number of urgent world problems.

But its prospects of expansion are very much dependent on the generosity of countries which supported its founding but have, as yet, not backed it with hard cash.

So far, only about a quarter (US \$ 126,000,000) of the six-year target of US \$500,000,000 has been pledged by UN member-states, and of that only a little more than US \$78,000,000 has actually been paid over.

Contributions have come notably from the Japanese, who have pledged US \$100,000,000 over five years and have also given the UNU a home in the Toho Seimei Building in Tokyo.

Other contributions have come from Australia, the Netherlands, Norway, Sweden and Switzerland of the developed world, while the oil-rich Libyans and Saudi Arabians have also dug into their pockets.

Of the Third World countries—which the UNU is designed particularly to help—India (US \$750,000 pledged), Ghana (US \$2,500,000), the Philippines, Senegal, Sudan and Zaire have been among the leading contributors.

Most conspicuous by their absence, however, have been many leading developed nations, among them the United States, West Germany, France, Britain and Italy, and the Soviet Union and Eastern bloc countries.

The US government has three years running proposed to Congress a contribution of US \$50,000,000 to be paid in instalments but for various reasons this has not been passed by Congress.

Factors in the most recent rejection by the members of Congress were, apparently a certain amount of anti-UN feeling and the fact that it was put before Congress late one afternoon when a number of Congressmen favourable to it were not present.

The Carter Administration, which is in favour of a contribution may re-introduce it early in the New Year, while a number of West European nations, such as British, France and West Germany are all actively considering the matter of contributions.

UNU officials are hopeful that money will be forthcoming from both the USA and West Europeans without whose support the University is unlikely to reach its US \$500,000,000 target.

In the case of the West Europeans particularly, the recession and its consequent restraints on spending may have played a part in the absence of contributions so far. Much discreet lobbying has been conducted by the American Rector of the UNU Dr James Hester and his staff and the United Nations,

which set up the University in 1975, has called on its member nations to support the body.

The UNU is unique among the United Nations, many organisations in that it is funded not by the UN but by voluntary government contributions.

On the one hand this can lead to financial worries of the sort the UN's chiefs are experiencing now. On the other hand, it does leave the organisation free from political pressures which could be applied to it if it were a direct funded UN body.

First envisaged by former UN Secretary-General U Thant as a conventional university, the UNU finally took shape as a centre for coordination and research work which now involves 16 associated institutions worldwide and some 60 countries.

The idea was, and still is, to get US \$50,000,000 in contributions which would be invested wisely by the UN and the income—say US \$40,000,000 annually—would be used to run the UNU's programmes.

At present the money received from 20 donating countries (including the Vatican) totals just over US \$78,000,000. This gives an annual income of around US \$6,000,000 which is not enough for an effective world-wide programme.

In 1978, the additional funds necessary to meet the total expenditure of just over US \$9,000,000 will come from operating contributions, and funds carried over from the previous year.

It is fairly obvious that until the UNU attracts more contributions and gets nearer its target it will be unable to radically expand its work as it wishes to.

What the university seeks to propagate is increased world-wide understanding of major global problems and more practical knowledge and more capable people and institutions to help solve them.

So far, it has set up three programmes, the World Hunger Programme, Human and Social Development Programme, and the Use and Management of Natural Resources Programme.

The WHP has helped research into nutrition post-harvest food conservation and food policy planning and completed in 1977-78 the advanced training of 20 UNU Fellows and seven Senior Fellows at associated institutions in Guatemala, India and the Philippines.

In its Human and Social Development Programme, the UNU sees its role as a world forum on development issues and ideas and has started research project in some 40 countries.

In the Natural Resources Programme, a solar energy information service operating from Japan has been set up and a Fellowship training programme established.

The UNU has no campus or faculty, and no degree students, either. Instead it functions through its Tokyo Headquarters of around 80 full-time staff as a sort of honest broker bringing together different institutions—as varied as the University of Reykjavik and the Central Food Technological Research Institute, Mysore—and individuals together. Initial priority has been given to problems in developing countries.

(Courtesy : The Mail)

Osmania Varsity organises 66th Science Congress

Prime Minister, Shri Morarji Desai, will inaugurate the sixty-sixth Indian Science Congress at the Osmania University, Hyderabad. The university is organising the Science Congress for the fourth time. Incidentally, 1979 is the diamond jubilee year of the university. The five-day congress with thirteen sections is likely to be attended by four thousand scientists representing fifty countries. The exhibitions on the progress of Science and Technology during the decade and scientific equipments will be organised in the university campus during the Congress. The meetings of the sectional committees and the Sectional Presidents address will be followed by panel discussions on science and technology in India during the coming decade. There will be a joint discussion on engi-

JNU organises workshop on Life Sciences

The School of Life Sciences of Jawaharlal Nehru University, New Delhi, with the assistance of UGC organised the workshop on 'Life Sciences' under the Directorship of Prof. P.N. Srivastava. The workshop while clarifying the purpose and philosophy behind the concept of Life Sciences and the necessity of having to implement it, reaffirmed the continued need for discipline-oriented subjects such as Botany, Zoology, Microbiology, Physiology, Biochemistry, Biophysics, Genetics etc. It was felt that the approach to the study of microbes, plants and animals under separate disciplines had yielded a wealth of information to mankind. However, the utility of the inter-disciplinary approach for elucidating biological processes which obey the laws of physics, chemistry and mathematics was fully appreciated

- (i) A substantial grant for equipment and teaching aids to start such new programmes with a minimum of Rs five lakhs at the undergraduate level and Rs fifteen lakhs at the postgraduate level.
- (ii) For such new programmes, a minimum of six posts at the undergraduate level and fifteen posts at the postgraduate level should be sanctioned. This minimum number should be appointed on the inception of the Department/School in order to form a truly viable intracting group rather than on the basis of undue emphasis, especially at the postgraduate level, on the teacher-pupil ratio.
- (iii) Regarding the job opportunities for those with Degrees in Life Sciences, the U.P.S.C., State Public Service Commissions, Medical Institutions, Universities and Colleges, National Research Organizations etc. should be formally approached, so that necessary instructions are given to provide equivalence in job opportunities to degree holders in Life Sciences. It was also agreed that Life Science should form a separate subject in the Public Service Commission competitive examinations.
- (iv) Wherever a School of Life Sciences is newly introduced, the unitary character should be maintained, without fragmentation into Centres/Departments.
- (v) The syllabi for postgraduate Life Sciences programme should be diversified according to the different locations and situations in States and Universities, in addition to a core programme.
- (vi) Undergraduate Schools/Departments of Life Sciences should be established in different colleges.
- (vii) In the light of the above recommendations, appropriate grants for equipment, teaching aids and faculty

CAMPUS NEWS

neering science and a lecture by Prof. M.G.K. Menon. Dr. S. Mukherji will deliver the B.C. Guha Memorial Lecture and Dr. Jagjit Singh will speak on science and technology during 2000 A.D.

The seminar on history and philosophy of mathematical sciences, the annual meeting of the Indian Science News Association, Indian Society of Development of Biologists and Indian Society of Ichthyologists will also be held. Philip R. White Memorial Committee meeting will be followed by the Council of Indian Science Congress meeting.

The various sessions of the Science Congress will be held at five different places—Osmania University Campus, Andhra Pradesh Agricultural University, Jawaharlal Nehru Technological University and Osmania Medical College.

at the workshop. The consensus was that the existing discipline oriented approach has to be fostered. But at the same time the newer approach to teaching and research in Biology will also have to be strengthened and encouraged at all levels.

The workshop recommended the continuation of programmes relating to the disciplinary approach to Botany, Zoology, Microbiology, Physiology, Biochemistry, Biophysics, Genetics since there will be a continued demand for persons trained in such disciplines. It further recommended the need for an inter-disciplinary approach to teaching and research for understanding and elucidating life processes at various levels of organization. It was felt that inter-disciplinary programmes could not be effectively implemented without fulfilling the following requirements:

positions should be made available to existing Departments/Schools which have ongoing programmes in Life Sciences.

World congress of anthropological and ethnological sciences

Prime Minister, Shri Morarji Desai, while inaugurating the tenth International Congress of Anthropological and Ethnological Sciences in New Delhi recently urged the anthropologists to show mankind the way to unity and world peace. He said until the existing disparities between man and man were reduced, mankind would continue to be torn by strife. He asked the scientists to educate the minorities and help them develop the capacity to face the civilised world. It was fortunate that there had been a greater awareness in recent years but the efforts were not commensurate with the task before us. He felt that the purposeful study of anthropology had to plan the correct perspective, and suggest remedies for the present ills to achieve equality among mankind. The Prime Minister said the anthropologists had ample material and scope in this country for developing their studies.

Shri D.V. Urs, Vice-Chancellor of Mysore University addressed the post-plenary session of the Congress, jointly organised by the Central Institute of English and Foreign Languages and Mysore University and said anthropological and ethnological sciences had an important role to play in the description of the societies of both developed and developing nations. The social and economic conflicts of these nations, the processes by which an elitist minority came to occupy important positions and imposed its own image, culture of the majority and how a mirage of socio-economic justice was offered to masses through exploitation had to be studied by these sciences. Shri Urs said that the Anthropologists could notice the dark spots of human nature operating in Africa and colonialism in parts of the developed nations where the

immigrants were treated with contempt. The Vice-Chancellor appealed to the Anthropologists and Ethnologists to reveal the brilliant features of world culture as well as expose its dark spots.

About thirteen hundred research papers were presented and two thousand delegates from twenty countries participated in the Congress, held for the first time in India. The subjects for discussion included cultural anthropology, human biology and archaeology.

World symposium on farm technology

The Indian Council of Agricultural Research will organise early in 1979 an International Symposium on Agricultural Research and Education for Development which will be also the first meeting of the new agency, the International Federation of Agricultural Systems for Development formed by agricultural universities and National Agricultural Research Institutions of the developing countries.

Dr. M.S. Swaminathan, Director-General of the Council said in Madras that representatives of the agricultural universities and the Council research stations would soon meet at Hyderabad to chalk out a programme for 'lab-to land' transfer of technology. The programme is proposed to be launched with an estimated investment of Rs. two hundred fifty crores with the three-fold objective of increasing food production, employment and income. Dr. Swaminathan said the programme in the first instance would cover fifty thousand families in the blocks taken up for integrated rural development and was aimed primarily at improving the conditions of the weaker sections, including the marginal farmers and landless labourers. The programme would encompass the entire gamut of activities of farming, aquaculture and animal husbandry. A monitoring system to assess and record the impact of the programme on beneficiaries will also be evolved. The efforts would be to transfer the complete technology from

'lab-to-Land' already made in the field of fisheries.

Science and spirituality

Prime Minister. Shri Morarji Desai, while presenting the Hari Om Ashram awards for science to seven scientists in New Delhi said India provided a congenial ground for amalgamation of science and spirituality both of which were ways of seeking the truth. The Prime Minister said in our relentless efforts in pursuit of science, we sometimes forgot the truth. He said India was the only country where atomic energy was utilised for betterment of the mankind. Human welfare formed part of spiritual pursuit. The Prime Minister said the combination of science and spirituality was, therefore, possible in India which had a continuity in its culture.

Dr. P.C. Chunder, Union Education Minister said that there should be no conflict between religion and science and both should have an integrated approach for betterment of life.

Prof. Satish Chandra, Chairman of the University Grants Commission said that quantum and quality of scientific research in universities were the most reliable index of progress of scientific work in the country. He said about one thousand major research projects were being conducted under the auspices of the Commission and two-thirds of these were of fundamental nature and the rest related to the national research and development effort. Some of the UGC programmes in which students projects were encouraged had shown good results. Dr. Satish Chandra said besides undertaking programmes on adult education, the Commission had already taken steps to help in the educational development of the under-privileged sections of community. He suggested that in a developing country, programmes for educating adults and under-privileged section should not be counterpoised to the development of higher education and research. Both the programmes are necessary for balanced growth and

development of the economy with social justice.

The awards have been instituted by the Hari Om Ashram through the University Grants Commission. The recipients of awards included Prof. C.N.R. Rao of the Indian Institute of Science, Bangalore, who won the Sir C.V. Raman award for experimental research in physical sciences; Prof. A.N. Mitra of Delhi University and Prof. P.M. Mathews of Madras University shared the Meghnad Saha award for research in theoretical sciences.

IIT develops solar cell

Indian Institute of Technology, New Delhi has developed the most efficient solar cell that converts sunlight into electricity. The device is made of Cadmium Sulphide which is too cheap than cells made of silicon which is at present imported. Dr. K.L. Chopra, Physicist of the Institute said that the solar cell could convert eleven percent of sunlight into electricity. He said this was the highest efficiency obtained so far in the world. Dr. Chopra said that his group was working out a method to protect the cell from environment. The commercial application of CDS solar cells would have to wait for some time.

A new method of transformation of solar energy into electricity with the aid of protein compounds has also been evolved by the Soviet scientists.

Madurai seminar on solar energy

Prof. M.G.K. Menon, Secretary, Department of Science and Technology, while inaugurating the International Symposium on Biological Application of Solar Energy at Madurai Kamaraj University, stressed the need for decentralised tapping of solar energy for agricultural as well as household purposes in the rural areas. He said in addition to providing fuel for rural population this would also check the deforestation. Prof. Menon called upon the scientists for a closer cooperation and understanding among themselves for exploitation and proper utilisation of solar

energy for benefit of mankind.

Dr. V.C. Kulandaiswamy, Vice-Chancellor of the University said that in a country like India utilisation of solar energy had additional significance. The possibility of preserving the present energy sources and developing alternatives for industrial development seemed to be a difficult task. Energy is the key to industrialisation. Industrial civilisation itself was born through energy processing and solar energy could be one of the source of obtaining energy through decentralised generation process. Dr. Kulandaiswamy referred to the study conducted in different parts of the world on solar energy and said that Sweden hoped to derive sixty two percent of its energy needs from renewable biological resources within two decades. Brazil, Philippines, Australia, Germany and Israel had already made significant progress in this direction while the USA hoped to derive about twenty-five percent of the total solar energy produced in the world by the year 2020.

The symposium is being attended by about two-hundred scientists from all over the world.

Need for alternative sources of energy

Prime Minister, Shri Morarji Desai, while inaugurating the international seminar on 'prospects techniques and economics of coal washing in India' held recently in New Delhi asked the scientists and technologists to suggest the alternative sources of energy in adequate quantities and proper quality. This would enable the country to overcome the difficulties faced in the field of energy. Though coal production had gone up in the recent years there had been no substantial increase in the production of quality coal. He said proper research had to be undertaken to improve the quality of coal in the country. The method of beneficiation should be economically viable. The Prime Minister said modern civilization depended on the availability of power and steel which again were dependent on coal to a large extent. He

hoped that the country would find alternative source of energy, particularly the solar energy.

Shri P. Ramachandran, Energy Minister said that India had a programme to increase coal production from the current year level of 106 million tonnes to 240 million tonnes by 1988. If India was to conserve and extend the limited life of coal reserves, scientists and technologists must think in terms of reducing coke consumption.

Course for information scientists

A two-week course of systems analysis for information scientists was organised recently by the Department of Science and Technology under National Information System for Science and Technology (NISSAT). The course was found useful to the managerial cadre of various centres of information. The course was first of its kind in the country. It covered a broad spectrum of subjects such as optional research techniques, international information network, information products and services and introduction to computer based system of analysis.

Dr. R. Thiagarajan, Director, Information and Documentation Division in the Department of Science and Technology was the course co-ordinator. Professional experts and teachers in the various disciplines of computer technology were invited to address the participants.

Academy of sciences meet

Prof. S. Dhawan, Chairman, Indian Space Research Organisation and President of the Indian Academy of Sciences while inaugurating the 44th annual meeting of the Academy in Hyderabad said that brain drain of scientists was not increasing in India. He said that it would be nice if the Indian scientists come back to their country to serve the nation. There was no dearth of scientists in India and our scientists were second to none. Prof. Dhawan said the Academy had been encouraging young scientists and its membership had increased considerably during the recent years.

Stress on self-reliance in technology

Dr. H. N. Sethna, Chairman of the Atomic Energy Commission while delivering the convocation address at the National Institute for Training in Industrial Engineering in Bombay said that one of the cornerstones of development was attainment of self-reliance in technology. He said that development of own technology could break the strong hold of the advanced countries on economic and technological position of the developing countries. Dr. Sethna said economic theories borrowed from the West were not suitable for planning and development in India. The problem of industrialisation arose from the social, political, economic and cultural environments of our country and was accentuated by the forces of international trade and relations. Dr. Sethna stressed the need for better understanding of problems before investing the resources. Dr. Sethna said the foreign exchange component in the field of atomic energy had been brought down from hundred percent for Tarapur atomic power plant to ten per cent for the Narora Plant in U.P. He said the country was now ready to tap the potential of atom for peaceful purposes.

Shri P.C. Lal, Chairman of Board of Governors of the institute said the Institute was planning to introduce fellowship programme equivalent to doctorate degree at the universities. He said the Institute was bringing technology and management together.

Indian Institutes of Technology role in national development

The Indian Institutes of Technology at Kanpur, Delhi, Bombay, Madras and Kharagpur will embark on an action programme during the sixth plan period to provide an infrastructure of science and technology in the fields of manpower research and development, consultancy and continuing education.

The IIT at Kanpur has been a pioneer in the country in the

study of computer culture among the educational institutions and industry. The Institute will soon acquire DEC 1090, a fourth generation computer with interactive terminals. The Institute has introduced a five-year B. Tech. programme in computer systems and science from the current academic session. The course is first of its kind in the country. An Advanced Centre of Electronics Systems with the financial assistance from the Ministry of Defence to carry out research and development work in electronics and communications was established at the institute last year. The inter-disciplinary programme of Material Science at postgraduate level was first introduced at the Institute. About one hundred schemes are operating in the various departments of the Institute which are financed by the Department of Science and Technology, Aeronautical Research Development Board, Council of Scientific and Industrial Research, Department of Electronics and Department of Atomic Energy. The Department of Science and Technology recently sponsored a programme on solar energy both in developing photovoltaic cells of high efficiency and better design of collectors for thermal conversion.

The Institute is providing liason with industry through its faculty participation for six to eight weeks during summer in the programmes of various industries. The Institute offers its testing facilities to industries and conducts short-term courses for their benefit.

Medical scientists meet in Madras

The joint annual conference of the Association of Physicians, Cardiological Society of India, Indian Society of Haematology and Blood Transfusion, Diabetic Association of India, Indian Society of Nephrology, Endocrine Society of India and Indian Association of Chest Diseases, will be held at Madras during the third week of January. The conference is expected to be one of the largest with nearly fifteen hundred medical scientists meeting

from all over the country and abroad. All the scientific sessions will be held in Madras Medical College. The morning sessions will be combined meetings under the auspices of the Association of Physicians of India and in the afternoon the various specialists will hold their separate sessions. There will be more than a dozen orations by distinguished specialists including a few from abroad. About five hundred scientific papers in the various fields of medicine in India will be presented and discussed. The plenary session will discuss Health Care in India during the decade. A full day postgraduate training course will be organised under the continuing medical education programme of the API. Teachers from medical faculties from all over the country will participate in the special coaching programme for the benefit of young doctors. An elaborate scientific exhibition of the sophisticated medical equipment will be organised during the conference. A diet exhibition, an exhibition on patient education, series of lectures on topics of importance to diabetic patients, a panel discussion on management of diabetes and film shows will also be arranged during the conference.

Need for development of indigenous technology

Shri H.M. Patel, Union Finance Minister, while addressing the Indian National Committee of International Chamber of Commerce in New Delhi said that modern technology could not be the main source of progress in India where the need was to utilise its largest manpower resources. He said in a developing country like India the growth could not be at the expense of people. The technology used in Germany, Japan or the United States was not suited to this country. We should develop our own technology and orient our technological maturity to solve the problems of unemployment. He said India should seek foreign markets by adapting its products to global requirements and mobilising the resources for development purposes.

Change in medical education system urged

The Vice-President, Shri B.D. Jatti, in his inaugural address at the annual conference of Association for Surgeons of India held recently in Gauhati stressed the need for a radical change in the system of medical education to make it relevant and meaningful to the needs of society. Shri Jatti said the present system structured on British pattern left much to be desired. The various conferences and workshops had discussed and made several recommendations which required implementation. The Vice-President said the Association should give a serious thought to guide the entire training, teaching and evaluation programme at the undergraduate and postgraduate level. He complimented Indian surgeons who had done a remarkable job under the primitive conditions. He asked the Association to work in liaison with industry and Government to extend the fruit of their knowledge and skill to the common man in village. The Vice-President said the specialists should not move away from their responsibility in the education and training of an individual in the general area.

State Chief Minister, Shri Golap Borbora said the medical profession should make available the medical and surgical care to the masses at a cheaper cost. The utilisation of traditional scientific methods which were comparatively cheaper and met the psychological, ethical and moral feelings of the rural people, could bring down the cost of health services.

A scientific exhibition was inaugurated by Smt. Renuka Devi Barkataki, Union Minister of State for Education.

Dr. A. Venugopal, in his presidential address said the Association should develop a perspective planning for medical education and research for the next decade.

Need for rural based technology

Shri Balwant Singh, Finance Minister of Punjab while inaugurating the national convention of Indian Society for Technical

Education at Thapar Institute of Engineering and Technology in Patiala, urged the need for re-orientation of science and technology to meet the requirements of rural community. He said that most of the engineering colleges and technical institutions had been alien to the needs of rural people. The engineers had not been able to design a bullock cart with improved technology which could meet the psychology of rural masses. He hoped that the Society in cooperation with UNESCO would formulate policies for further development of engineering institutions.

Dr. N. M. Swani, President of the Society in his presidential address pleaded for a national framework within which industry could contribute towards the funding and management of technical institutions particularly those training middle level technicians. He said that one of the main problems faced by developing countries was their failure to train personnel having intermediate technical capacity. The manpower training system in India had developed some serious imbalances which, he hoped, other developing countries would avoid. Too much emphasis on university education had yielded a vast reservoir of scientific and technological manpower which could not be fully utilised in Indian economy. He said this surplus manpower would be of great assistance to other developing countries in achieving self-reliance through application of modern technology. Dr. Swani said our projections of manpower requirements had been based on optimistic estimates for the growth of industry and national economy.

Shri H. S. Shahni, Joint Educational Adviser in the Union Ministry of Education in his keynote address pleaded for providing a sound technological base. He urged the Society to organise itself into a specialised agency for development of technical education and training in the country.

Dr. Anug Gyi, UNESCO expert detailed the UNESCO programmes for technical education in the developing countries.

About three hundred techno-

logists including representatives of UNESCO attended the Convention.

Kamaraj Varsity plans institute for environmental studies

The Syndicate of the Madurai Kamaraj University at its recent meeting approved the establishment of an Institute for Environmental Studies to create an awareness among people and prevent further deterioration of the environment. Most of the environmental degradation could be attributed to the use of technology without adequate understanding of the problems. A clear understanding of basic ecological principles could help to avoid mistakes which the developed countries have made. The institute will develop methods which would assist in the understanding, definition, evaluation and solution of environmental problems of national and regional interest. It will study the environmental legislation, statutory laws and acts concerning air and water quality standards, safety standards, national building acts and noise abatement bye-laws. The functions of the institute would cover research on projects of national, regional and local importance; organise seminars and short-term courses; undertake training programmes in environmental impact assessment; study various options and socio-economic factors which will affect the quality of life and publish monographs. Increasing awareness of these problems such as chemical pollution, depletion of soil, forest cover and other natural resources as well as the spread of endemic diseases has emphasised the need for such an approach. Many development programmes and projects without an environmental impact assessment have led to new concerns. The institute will look into the environmental aspects of the various projects on a long term basis. Methodologies will be developed for necessary projection and prediction. It would work in close collaboration with the National Environmental Engineering Research Institute, Nagpur, Environ-

mental Engineering Department of the Arignar Anna Technological Institute, Madras Medical College and IIT Madras. The affairs of the institute would be guided by an Advisory Council.

Instrumentation laboratory at IIT commissioned

Prime Minister, Shri Morarji Desai inaugurated recently the sophisticated and well-equipped laboratory of the Regional Instrumentation Centre at the Indian Institute of Technology in Bombay. He said the laboratory would be of immense help to the educational and research institutions in the country. The laboratory will acquire sophisticated instruments and provide service to the academic, research and industrial organisations at a modest charge. It is one of the four centres to be established by the Department of Science and Technology. Although some of the instruments will be common at these four centres, each will have its own individuality with the added objective to train personnel and develop instrumentation. The equipment already in possession of the laboratory include electron spectrometer for chemical analysis, instrom and universal testing machine. Other equipment which will be progressively commissioned at the laboratory are : mass spectrometer with gas chromatograph, laser raman spectrometer, electron spin resonance spectrometer with electron nuclear double resonance. Equipment that will be added shortly are ultra violet visible and infra-red spectrometer, pulsed fourier transform attachment to MR, energy dispersive X-ray analyser. These instruments are suitable for both pure and applied research and there is considerable demand for their use from both research institutions and industries.

Plea for balance in ecology

The seminar on management of forest and pastures held recently in Jhansi under the auspices of the Rural Development Department has recommended that scientists should prepare a blue-print for an action programme for

transfer of technology developed by the Indian Grassland and Fodder Research Institute to the rural community keeping in view the interest of tribal and neglected areas. The seminar formulated plans for social and farm forestry systems of land utilisation for the benefit of village population so that it remained contended and did not move towards cities for their economic requirements.

About sixty delegates from the various state departments and universities discussed the problems of forestry for maintaining the ecological balance as well as meeting timber, fuel and fodder requirements.

Farmers' literacy programme at Gujarat Agricultural University

The Gujarat Agricultural University has started the first of its 6-month programme in training 15 Adivasi couples in agricultural operations. The training includes comprehensive programmes beginning from ploughing to harvesting including pre-harvest, mid-harvest and post-harvest technology. Each couple would be paid Rs. 200/- per month besides free lodging facilities.

The palace of Maharaja Jaideep Singh Ji has been donated to the university by the Maharaja together with 11 acres of land and a mango grove. The palace is at present being used by the university for the lodging of these Adivasi trainees.

Another batch of 15 adivasi couples will be given this training after the first batch moves out.

Plan to introduce regional languages in IITs

The Council of Indian Institutes of Technology has decided to allow use of regional languages for answering questions in the joint entrance examination conducted for admission to the five Institutes of Technology. The change is intended to remove the difficulties faced by students who had studied with regional language as medium of instruction at secondary school level. The Council has approved the change on the basis of the report of Satish

Chandra Committee. The Committee headed by Prof. Satish Chandra, Chairman, UGC had recommended change in the present pattern and structure of joint entrance examination to ensure that candidates were not forced to depend on their competence in English. The Committee had recommended that objective type questions should be included in simple English. The questions requiring answers of descriptive nature should be kept to the minimum and the candidates should be permitted to answer them in English or in regional languages. The continuance of comprehensive paper in English has not been favoured. The Committee felt that the candidates should have only functional knowledge of simple English. The candidates admitted to the IITs could be given a programme of

54th Annual Meeting of AIU

The 54th annual meeting of the Association of Indian Universities scheduled to be held on 16th & 17th January, 1979 at the Punjabi University, Patiala, has been postponed by about 3-4 weeks.

coaching in English, if required. Enhancement of scholarships for the weaker section of society had also been recommended by the Committee. It was noted by the Committee that medium of instruction at the secondary school stage in almost all the States had been changed to the regional language. Most of the universities have also switched to the regional language at some stage or the other including science and professional courses. The Committee therefore felt that it was fair to allow the candidates to take the entrance examination in their own language.

The Council of the institutes has referred the implementation to a committee of Directors of the IITs besides a representative of the UPSC and Union Education Ministry.

A list of Doctoral Theses Accepted by Indian Universities

SOCIAL SCIENCES

Psychology

1. Barlingay, Mrinalini Krishnakant. A study of influence of mother's personality on child's personality. Nagpur University
2. Sewa Singh. A comparative study of personality characteristics of drug-users and non-users among university students. University of Delhi.

Anthropology

1. Ray, Himansumohan. The Savaras—A snake charming community of West Bengal. A study in search of identity. University of Calcutta.

Political Science

1. Mishra, Dinesh Chander. Madhya Pradesh ke rajniti per Gwalior ke Scindhiya parivar ka prabhav (Hindi). Jiwaji University.
2. Mohod, Sudam Budhaji. Impact of panchayati raj on the aboriginals of Melghat Taluq from 1962 to 1972 with special reference to Dharni Tribal Development Block. Nagpur University.
3. Zenab Banu. Politics of communalism: A politico-historical analysis of communal riots in post-independence India with special reference to Gujarat and Rajasthan riots. University of Udaipur.

Economics

1. Leela, Pillalamarri. Import substitution and economic efficiency: A case study of the Indian nitrogenous fertiliser industry. Andhra University.

Law

1. Egaonkar, Vishnu Ramchandrarao. Administrative Law: A critical study of the concept of jurisdictional principle in administrative law—a comparative study. Marathwada University.
2. Gandhi, Joginder Singh. Lawyers at a District Court: A study in the sociology of legal profession. Jawaharlal Nehru University.
3. Gyan Chand. Judicial control of labour tribunals in India. University of Delhi.

Education

1. Bhola, Vidya. Measurement of achievement in physics and chemistry: A critical study of the effectiveness of the matriculation examination in physics and chemistry conducted by the Board of School Education, Haryana. Kurukshetra University.
2. Borthakur, Sorbeswor. A critical study of the factors influencing teacher manpower requirements and developing a procedure for forecasting manpower needs. University of Delhi.
3. Chattopadhyay, Mihir Kr. A study of imagery as a mediator in instruction. University of Calcutta.
4. Pritam Singh. An investigation into the empirical validity of Bloom's taxonomy of educational objectives. University of Delhi.

Commerce

1. Bari, Ram Raj. Cash planning and management with special reference to selected public sector undertakings. University of Delhi.

Management

1. Mitra, Jay Kumar. Identity level of managers in a selected large undertaking with special reference to technological change. University of Delhi.
2. Sengupta, Sunanda. Structure, growth and working

of European companies in India since 1947. University of Delhi.

HUMANITIES

Language & Literature

English

1. Agarwal, Kavita. Byron's plays: A reassessment. University of Delhi.
2. Bhatt, P.N. A thematic study of the novels of R.K. Narayan, Mulk Raj Anand and Manohar Malgonkar. Saurashtra University.
3. Mukhopadhyaya, Asit Kumar. A study of William Somerest Maugham as a dramatist on the cross roads. Kanpur University.
4. Varum, Sumitra. Miracle of Emily Dickinson. Kanpur University.

Sanskrit

1. Bolia, Hem Lata. A critical study of Shabda Pramana. University of Udaipur.
2. Madhu Bala. Uvat: Bhashyakar ke rup mein. University of Delhi.
3. Manju Bala. Critical study of Kavyanusashana. Kurukshetra University.
4. Nigam, Kiran. Kalidas ke krityon mein shabd shaktiyon evam alankaraon ka anupam vaishistya: Ek samikshatmak Adhyayan. Kanpur University.
5. Warnekar, Madhukar Bhaskar. Vedic concepts of Manas and Purusharth. Nagpur University.

Punjabi

1. Arora, Manjeet Kaur. Nanak Singh de novalan da theemik adhyayan: Matreyee Maa, Chitta Lahu, Pavittar Pappi de vishesh prasang vich. University of Delhi.

Hindi

1. Agrahari, Swarn Prabha. Sadharanikaran aur samantantar paschatya kavya siddhant. University of Delhi.
2. Bhargava, Aditaya Kumar. Hindi ke prateekatmak natak: Udbhawa vikas evam abhivyanjana shilp. Kanpur University.
3. Iqbal, Shaik Mohammed. A comparative study of short stories in Hindi and Telugu upto 1947 A.D. Andhra University.
4. Khanna, Triloki Nath. Swatantryottar Hindi upanyas mein jiwan mulyon ka sangharsh, 1947-70. University of Delhi.
5. Saxena, Neelam. Ritikaleen ritimukt kavya mein rititawa. University of Delhi.
6. Sharma, Dev Datta. Individual and progressive consciousness in regional novels of Hindi. University of Delhi.
7. Sharma, Vimla. Lakhimpur janpad ke lok sahitya ka adhyayan. Kanpur University.

Urdu

1. Hameeda Riaz. Maulana Mohammad Ali Jauhar. Nagpur University.

Bengali

1. Ghosh, Manu. Balaram Daser padavali. University of Calcutta.

Telugu

1. Ramakrishna Rao, Miriyala. A study of Sri Sri's poetry with special reference to context and technique from Prabhava to Mahaprasthanam. Andhra University.

Geography

1. Makhija, Manohar Lal. Locational study of educational institutions of Udaipur District: A study based on interdisciplinary approach. University of Udaipur.

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- Hare, R.M. "Opportunity for what?: Some remarks on current disputes about equality in education". *Oxford Review of Education* 3 (3); 1977: 207-16.
- Muller, Steven. "Essential ingredients of Freedom"- *Times Higher Education Supplement* (367); 24 Nov 78: 35.

EDUCATIONAL PSYCHOLOGY

- Beck, Aaron T. and Young, Jeffery, B. "College blues". *Psychology Today* 12(4); Sept 78: 80-92.
- Cartledge, Gwendolyn and Milburn, JoAnne F. "Case for teaching social skills in the classroom: A review". *Review of Educational Research* 48 (1); Winter 78: 133-56.

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- Dreijmanis, John. "From Weimer to Washington: The plight of the intelligentsia". *Journal of Higher Education* (Delhi) 3(2); Autumn 77: 227-36.
- Surya Nath Singh. "Needs and problems of university students living in 'Digs'". *University News* 16(20); 15 Oct 78: 1210-2.

EDUCATIONAL PLANNING

- Aikara, Jacob. "Higher Secondary in 10+2+3 pattern". *New Frontiers in Education* 8(4); Oct-Dec 78: 22-53.
- "FOURTH REGIONAL conference of Ministers of education and those responsible for economic planning in Asia and Oceania". *EPA Bulletin* 1(3); Oct 78: 17-40.
- Kothari, V.N. "Employment, dualism and education policy in India". *Manpower Journal* 14(2); July-Sept 78: 1-18.

EDUCATIONAL ADMINISTRATION

- Amar Singh and C. Prasad. "Study of job satisfaction of personnel in agricultural universities". *Journal of Higher Education* (Delhi) 3 (1); Monsoon 77: 111-16.
- Garret, Larry N and Garrett, C. Joanne. "On the need for analysis and reassessment of policy and management in higher education". *Education Quarterly* 30 (2); July 78: 1-5.
- McDowell, Linda. "University accommodation officers: Welfare officers or estate agents". *Higher Education Review* 10 (3); Summer 78: 55-62.
- R.K. Singh. "Good teachers". *University News* 16(22); 15 Nov 78: 1259, 1267-8.
- Srivastava, R.C. "Teachers' and students' participation in college administration". *Journal of Higher Education* (Delhi) 3(2); Autumn 77: 260-8.
- Vaish, L.P. "Concept of college development council in an affiliating university". *University News* 16(21); 1 Nov 78: 1238-9, 53.
- Verma, D.P. "Sycophancy in halls of residence". *Mainstream* 17 (12); 18 Nov 78: 18-9.

TEACHING

- Arya, R.C. "Assessing the English language teaching situation in India". *University News* 16(20); 15 Oct 78: 1207-9, 1212.
- Gross, Theodore L. "Organic teacher". *Change* 10(6); June-July 78: 37-9, 77.
- Gupta, M.P. and Sandhu, N.S. "Analytical study of trimester system of education". *Journal of Higher Education* (Delhi) 3(2); Autumn 77: 257-60.
- Jacob, Plamthodtine S. "How to make better use of the library in the teaching-learning process". *New Frontiers in Education* 8(4); Oct-Dec 78: 54-61.

Kraft, Robert G. "Bike riding and the art of learning". *Change* 10(6); June-July 78: 36, 40-2.

Miron, Mordechai and Segal, Esther. "Good university teacher' as perceived by the students". *Higher Education* 7(1); Feb 78: 27-34.

Peter, K.C. "Methods to help learners learn". *New Frontiers in Education* 8(4); Oct-Dec 78: 62-74.

EVALUATION

Hambleton, Ronald K, etc. "Criterion-referenced testing and measurement: A review of technical issues and developments". *Review of Educational Research* 48(1); Winter 78: 1-47.

Jarvis, Peter. "Students' learning and tutors' marking". *Teaching at a Distance* (13); Winter 78: 13-17.

Nehari, Miriam and Bender, Hilary. "Meaningfulness of a learning experience: A measure for educational outcomes in higher education". *Higher Education* 7(1); Feb 78: 1-11.

Samant, D.G. "Implications of grades for university teachers". *Journal of Higher Education* (Delhi) 3(2); Autumn 77: 269-71.

Schwartz, Steven A. "Comprehensive system for item analysis in psychological scale construction". *Journal of Educational Measurement* 15 (2); Summer 78: 117-23.

Winter, David G., Stewart, Abigail J. and McClelland. "Grading the effects of a liberal arts education". *Psychology Today* 12(4); Sept 78: 68-74, 106.

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Aikara, Jacob. "Non-formal education: What and why?". *Education Quarterly* 30(2); July 78: 10-12.

Al-Nassri, S.A. "Role and objectives of continuing education in Engineering". *Higher Education* 7 (1); Feb 78: 67-70.

Tiwari, M.L. "Role of non-formal education in reducing wastage in schools". *EPA Bulletin* 1 (3); Oct 78: 59-63.

ECONOMICS OF EDUCATION

Dey, Banomali. "Effectiveness of education on Indian agriculture". *Manpower Journal* 14 (2); July-Sept 78: 31-46.

Moyer, R. Charles and Kretlow, William J. "Resource allocation decision in U.S. colleges and universities: Practice, problems and recommendations". *Higher Education* 7 (1); Feb 78: 35-46.

Vishwanathan, R and Rohtagi, P.K. "Unemployed engineers scheme at the Indian Institute of Science". *Journal of Higher Education* (Delhi) 3 (2); Autumn 77: 271-3.

COMPARATIVE EDUCATION

&

COUNTRY STUDIES

"EDUCATION MINISTERS' conference—Held on July 13-14, 1978: Resolutions and Decisions". *EPA Bulletin* 1(3); Oct 78: 12-16.

Hennis, Wilhelm. "Legislator and the German University". *Minerva* 15 (3-4); Autumn-Winter 77: 286-315.

Mathias, T.A. "Christian educational effort in India". *New Frontier in Education* 8 (4); Oct-Dec 78: 1-21.

Nusrat and Shervani, Ahmad Rashid. "Education of Muslim girls of Uttar Pradesh". *Mainstream* 17 (12); 18 Nov 78: 5-8.

Pedersen, Mogens N. "Danish university between the millstones". *Minerva* 15 (3-4); Autumn-Winter 77: 335-86.

UNIVERSITY OF BOMBAY

Bombay-400032

Applications are invited in the prescribed form for the following posts in the University:-

Post/s	Department/Centre
1. Ramkrishna Gopal Bhandarkar Professor of Sanskrit	Sanskrit
2. Lecturer in Arabic	Foreign Languages
3. Professor	Linguistics
4. Professor	Geography
5. Lecturer (with specialization in Agricultural Geography)	
6. Lecturer	Education
7. Reader	Applied Psychology
8. Lecturer	
9. Lecturer	
10. Professor in Industrial Finance Corporation of India Unit (IFCI Unit) in Industrial Policy and Development	Economics
11. Reader in Rural Development (Temporary upto 31.3.1981)	
12. Lecturer in Rural Development (Temporary upto 31.3.1981)	
13. Professor of Urban Sociology	Sociology
14. Reader in Industrial Sociology	
15. Professor	Law
16. Reader	
17. Lecturer	
18. Professor	Mathematics
19. Two Lecturers	
20. Five Professors	Centre of Advanced Study in Mathematics
21. Four Readers	
22. Two Lecturers	Centre of East African Studies (Area Studies Programme)
23. Two Readers	
24. Two Lecturers	Centre of Soviet Studies (Area Studies Programme)
25. Lecturer in Swahili	
26. Two Readers	
27. Reader	
28. Two Lecturers	
29. Lecturer in Russian Language	

The pay-scales of the posts are: Professor — Rs. 1500-60-1800-100-2000-125/2-2500, Reader — Rs. 1200-50-1300-60-1900 and Lecturer — Rs. 700-40-1100-50-1600.

All posts carry the benefits of Dearness Allowance, House Rent Allowance and Compensatory Local Allowance at the rates sanctioned by the Executive Council from time to time. All posts, other than the temporary posts, carry the benefits of University Provident Fund. A higher starting pay may be given to a person possessing high qualifications. The appointments to the posts, other than the temporary posts, will be on probation for two years; but the probationary period may be waived by the Executive Council in special cases. Other things being equal preference will be given to candidates from backward classes. The posts of Lecturer are reserved for candidates belonging to scheduled castes and scheduled tribes and will be filled up by appointment of such persons only as shall satisfy the requirements regarding qualifications, experience etc. laid down for the posts, provided, however, that if no candidate is available from the scheduled castes and scheduled tribes, the posts will be

filled up by appointment of duly qualified persons from among the other applicants.

The minimum qualifications prescribed for the posts are as under:

Professor

An eminent scholar with published work of high quality actively engaged in research. Ten years' experience of teaching and/or research. Experience of guiding research at doctoral level.

Or

An outstanding scholar with established reputation who has made significant contribution to knowledge.

Reader

Good academic record with a doctoral degree or equivalent published work. Evidence of being actively engaged in (i) research or (ii) innovation in teaching methods or (iii) production of teaching materials.

About five years' experience of teaching and/or research provided that at least three of these years were as Lecturer or in an equivalent position.

This condition may be relaxed in the case of candidates with outstanding research work.

Lecturer

(a) A Doctor's degree or research work of an equally high standard; and

(b) Consistently good academic record with 1st or high 2nd class (B in the seven point scale) Master's degree in a relevant subject or an equivalent degree of a foreign University.

Having regard to the need for developing inter-disciplinary programmes, the degrees in (a) and (b) above may be in relevant subjects.

The Executive Council may relax any of the qualifications prescribed in (b) above provided that the selection committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard.

If a candidate possessing a Doctor's degree or equivalent research work is not available, or is not considered suitable, the Executive Council may appoint a person possessing a consistently good academic record (weightage being given to M.Phil. or equivalent degree or research work of quality) provided he has done research work for at least two years or has practical experience in a research laboratory/organisation on the condition that he will have to obtain a Doctor's degree or give evidence of research work of equivalent high standard within five years of his appointment, failing which, he will not be able to earn future increments until he fulfils these requirements.

The additional qualifications prescribed for the posts at serial numbers 5 to 12, 15 and 23 to 28 mentioned above are as under:

5. Lecturer (Geography): Specialization in Agricultural Geography. Published work or research work of recognised merit in the field of specialisation. Experience of teaching post-graduate classes.

6. Lecturer (Education): Specialization in Experimental Education and Educational Testing. Teaching experience of Degree/Post-graduate classes.

7. Reader (Applied Psychology): Specialization in Clinical Psychology.

8. Lecturer (Applied Psychology): Specialization in Educational Psychology, Guidance, Counselling.

9. Lecturer (Applied Psychology): Preferably with specialization in Clinical Psychology.

10. Professor (Economics): Research contributions in one or more of the following areas viz. Industrial Economics, Industrial Policy, Regional Development and Development Banking.

11. Reader in Rural Development (Temporary upto 31.3.1981) (Economics): The doctoral degree or equivalent published work must be in Economics or Sociology or Politics or Agriculture.

12. Lecturer in Rural Development (Temporary upto 31.3.1981) (Economics): The doctoral degree or equivalent research work must be in Economics or Sociology or Politics or Agriculture.

15. Professor (Law): Specialization in Jurisprudence and/or Criminal Law.

23. Two Readers (African Studies): Preferably with specialization in Political Science/Sociology/History. Teaching/Research experience in African Studies.

24. Two Lecturers (African Studies): Teaching/Research experience in African Studies.

25. Lecturer in Swahili (African Studies): Diploma in Swahili Language and Literature essential.

26. Two Readers (Soviet Studies): Preferably with specialization in Political Science/Sociology/History. Teaching/Research experience in Soviet Studies.

27. Reader (Soviet Studies): Preferably with specialization in Political Science/Sociology/History / Economics. Teaching/Research experience in Soviet Studies.

28. Two Lecturers (Soviet Studies): Preferably with specialization in Political Science/Sociology/History/Economics. Teaching/Research experience in Soviet Studies.

Two copies of the application (separate for each post), in the prescribed form, which can be had from the Registrar's Office (Room No. 121) should be submitted to the Registrar, University of Bombay, Bombay-400 032 so as to reach him on or before **25th January, 1979**.

Candidates called for interview will have to present themselves at their own expense.

Canvassing, direct or indirect, will be a disqualification.

P.S. Sawant
OFFG. REGISTRAR

KURUKSHETRA UNIVERSITY **Kurukshetra** **Advt. No. 14/78.**

Applications are invited for the following posts:-

1. Lecturers in A.I.H. Culture & Archaeology (one permanent and one temporary) (2) Rs. 700-40-1100-50-1600
2. Manuscript-Keeper in the Sanskrit Department (1) Rs. 300-15-450
3. Technical Assistant (Grade-II) in the Chemistry Department (1) Rs. 300-25-600-EB-25-700
4. Junior Technician (Grade-I) in the Geography Department (1) Rs. 200-15-320/20-500
5. Tracer (Temporary but likely to continue) (1) Rs. 120-5-145-7-180/12-300.

Qualifications

For the Post of Lecturers

- (a) A Doctor's degree or research work of an equally high standard or a recognised degree beyond the Master's level or published work indicating the capacity of a candidate for independent research work.
- (b) Consistently good academic record

with 1st or high 2nd class (B in the seven point scale). Master's degree in a relevant subject or an equivalent degree of a foreign University.

Having regard to the need for developing inter-disciplinary programmes, the degrees in (a) and (b) above may be in the relevant subjects.

Provided that if the Selection Committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard, it may relax any of the qualifications prescribed in (b) above.

Provided further that if a candidate possessing a Doctor's Degree or equivalent research work is not available or not considered suitable, a person possessing a consistently good academic record (weightage being given to M.Phil or equivalent degree or research work of quality) may be appointed, provided he has, done research work for atleast two years or has practical experience in a research laboratory/organisation on the condition that he will have to obtain a Doctor's Degree or give evidence of research work of equivalent high standard within five years of his appointment failing which he will not be able to earn future increments until he fulfils these requirements.

For the Post of Manuscript-Keeper

- (i) M.A. (Class I Or II) in Sanskrit with Oriental qualification.
- (ii) Acquaintance with old Sanskrit Manuscripts and different scripts.
- (iii) **Desirable:** Experience in editing Sanskrit manuscripts.

For the Post of Technical Assistant (Grade-II) **Essential**

M.Sc. 2nd Class.

OR

B.Sc. 1st Class with 3 years' experience in the line.

OR

B.Sc. 2nd Class with 5 years' experience in the line.

Desirable

Experience in operating NMR equipment and its maintenance.

For the Post of Junior Technician (Grade-II) in Geography Department.

B.Sc. 2nd Class.

OR

B.Sc. 3rd Class with one year's experience in the line.

OR

I.T.I. Certificate with one year's experience in the line.

OR

Matric first Class with Science with 3 years' experience in the line.

OR

Matric 2nd Class with Science with 7 years' experience in the line.

Preference will be given to M.A./M.Sc. in Geography.

For the Post of Tracer

Matric with I.T.I. Diploma in Draftsman (Civil) or at least 3 years' practical experience as Tracer in any recognised office.

SPECIALIZATION REQUIRED FOR THE POSTS OF LECTURERS

Archaeology and Epigraphy/Greater India/Numismatics/Historiography or Socio-Economic History.

Knowledge of Hindi desirable. Usual allowances, P.F. etc. admissible as per University Rules. In case of Lecturers and Non-teaching posts 20% & 2% posts are reserved for Scheduled Castes and Backward Classes respectively, but in the case of non-teaching posts 30% posts are reserved for ex-servicemen also. However, if suitable candidates for these reserved posts are not available, these shall be treated as unreserved. Candidates who have applied for the post of Manuscript-Keeper in response to Advt. No: 3/77 need not apply again.

Applications (through proper channel) for those in employment on the prescribed form obtainable from the Asstt. Registrar (Esstt), Kurukshetra University, Kurukshetra for posts at Sr. No: 1 and on plain paper for post at Sr. No: 2, 3, 4 & 5 alongwith attested copies of certificates/testimonials and accompanied by Crossed Indian Postal Orders for Rs. 7-50 drawn in favour of the Registrar, Kurukshetra University Kurukshetra and payable at the University Post Office should reach the Asstt. Registrar (Esstt) on or before **8-1-1979**, Ex-servicemen are exempted from application fee.

REGISTRAR

SAURASHTRA UNIVERSITY **Rajkot**

Applications in the prescribed forms are invited for the undermentioned posts in the various Departments of this University. Application forms alongwith detailed requirements of qualifications and experience for these posts will be available from the Registrar, Saurashtra University, University Campus, Kalawad Road, Rajkot-360005 on sending a self addressed envelope of the size 23 x 11 cms. with postage stamps worth Re. 1-15.

Applications (seven copies) accompanied by Indian Postal Order for Rs. 5/- crossed in favour of the Registrar, Saurashtra University, Rajkot, should reach this office on or before **15-1-79**.

1. Department of Gujarati
Professor—1
2. Department of Law
Reader—1
Preferably specialized in Mercantile Law.
3. Department of Education
(a) Reader—1
(b) Lecturers—2
4. Department of Commerce
(a) Professor—1
(b) Reader—1
Accountancy, Business Management, Personnel Management, Marketing Management or any other specialization field in Commerce and Management.
5. Department of Chemistry
Professor—1
Preferably Organic. Those specializ-

ed in Inorganic Chemistry may also apply.

6. Department of Physics

Lecturer—1

Candidates must be qualified to teach and guide research in the following specialised areas:

- (a) Solid State Electronics (b) Energy—with special reference to Solar and Radiant energy resources development (c) Environmental Physics.

“Persons who have carried on significant research in fields other than above may apply and their applications are likely to be considered.”

Pay Scales

1. Professor : Rs. 1500-60-1800-100-2000-125/2-2500.
2. Reader : Rs. 1200-50-1300-60-1600-Assessment-60-1900.
3. Lecturer : Rs. 700-40-1100-50-1300-Assessment-50-1600.

Reservation for Scheduled Castes/Scheduled Tribes, Nomadic Tribes/De-notified Tribes and Social and Educational Backward Classes will be 5%. Age ordinarily not exceeding 55 years. The posts are permanent and carry benefit of Contributory Provident Fund as per University rules. Dearness Allowance and House Rent Allowance will be paid as per University rules. Higher initial salary in the scale may be considered in case of exceptionally qualified and experienced persons. Qualifications and experience may be relaxed in Special Cases. Candidates in employment must submit their application through their present employer. Those knowing Gujarati and/or Hindi will be preferred.

V. M. Desai
REGISTRAR

UNIVERSITY OF BOMBAY Bombay-400032

Applications are invited in the prescribed form for the following posts in the University Department of Chemical Technology/Centre of Advanced Study in Applied Chemistry:

1. Professor of Chemical Engineering (with specialization in Process Engineering)
2. Professor of Fermentation Technology
3. Professor of Solid State Physics (CAS)
4. Reader (with specialization in Phytochemistry)
5. Reader in Mechanical Engineering
6. Lecturer in Inorganic and Physical Chemistry
7. Singhanee Lecturer in Chemical Engineering.

The pay-scales of the posts are: Professor—Rs. 1500-60-1800-100-2000-125/2-2500, Reader—Rs. 1200-50-1300-60-1900 and Lecturer—Rs. 700-40-1100-50-1600.

All posts carry the benefits of Dearness Allowance, House Rent Allowance and Compensatory Local Allowance at the rates sanctioned by the Executive Council from time to time. All posts carry the benefits of University Provident Fund. A higher starting pay may be given to a person possessing high

qualifications. The appointments to the posts will be on probation for two years; but the probationary period may be waived by the Executive Council in special cases. Other things being equal preference will be given to candidates from backward classes. The posts of Lecturer are reserved for candidates belonging to scheduled castes and scheduled tribes and will be filled up by appointment of such persons only as shall satisfy the requirements regarding qualifications, experience etc. laid down for the posts, provided, however, that if no candidate is available from the scheduled castes and scheduled tribes, the posts will be filled up by appointment of duly qualified persons from among the other applicants.

The minimum qualifications prescribed for the posts are as under:

1. Professor of Chemical Engineering (with specialization in Process Engineering)—A candidate must have a basic degree in Chemical Engineering and a Doctorate degree. He must have a minimum of 15 years of professional experience and a proven record of good research. He must have effectively interacted with industry in the area of process engineering and design. He must have also successfully guided at least two Ph.Ds. in Chemical Engineering/Technology.

2. Professor of Fermentation Technology—A candidate must have passed Bachelor's degree examination in Chemical Technology in first class and must possess a doctorate degree. He must have experience of teaching and/or conducting research for post-graduate students for not less than ten years. He must possess adequate experience of guiding research of Ph.D. standard in the Fermentation Technology.

3. Professor of Solid State Physics—(a) An eminent scholar with published work of high quality and actively engaged in research pertaining to experimental Solid State Physics. Ten years' experience of teaching and/or research. Experience of guiding research at doctoral level.

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge.

and

(b) A candidate must have worked on organic solids and more specifically on polymers, plastics and synthetic fibres which is the subject of specialisation of the Centre of Advanced Study in Applied Chemistry. Recent published work in one or more of the following topics in the field of organic solid state will be an essential requirement:

1. Morphological studies in relation to properties of polymers and plastics.
2. Viscoelastic and Rheological behaviour of plastics, melts and solutions.
3. Dielectric and mechanical properties of polymers and plastics and associated relaxation phenomenon in relation to structure.
4. Interaction of polymers with diffusants (solvents, dyes, etc.).
5. Organic semiconductors.

6. Surface properties of organic solids.

7. Interaction of radiation with organic solids specially polymers.

4. Reader (with specialization in Phytochemistry)

A Doctorate as well as Master's degree in Pharmacy or in Technology of Pharmaceuticals and Fine Chemicals with teaching experience of at least 3 years in the subject of Pharmacognosy/Phytochemistry.

At least 7 years' research experience in the field of natural products.

In addition to teaching the above subjects, the selected candidate would be expected to conduct and guide research in the field of natural products with particular emphasis on standardisation of Ayurvedic drugs and formulations.

5. Reader in Mechanical Engineering

A candidate must have a Doctorate degree in appropriate branch of Engineering with good academic record and must have at least one year's professional or research experience outside the work for the degree, preferably in the field of Plastic Engineering.

OR

A candidate must have a Master's degree in appropriate branch of Engineering with good academic record and must have at least four years' professional or research experience outside the work for the degree, preferably in the field of Plastic Engineering.

6. Lecturer in Inorganic and Physical Chemistry

(i) (a) A Doctor's degree in Physical or Inorganic Chemistry or research work of an equally high standard; and

(b) Consistently good academic record with 1st or high 2nd class (B in the seven point scale) Master's degree in a relevant subject or an equivalent degree of a foreign University.

Having regard to the need for developing inter-disciplinary programmes, the degrees in (a) and (b) above may be in relevant subjects.

The Executive Council may relax any of the qualifications prescribed in (b) above provided that the selection committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard.

If a candidate possessing a Doctor's degree or equivalent research work is not available or is not considered suitable, the Executive Council may appoint a person possessing a consistently good academic record (weightage being given to M.Phil. or equivalent degree or research work of quality) provided he has done research work for at least two years or has practical experience in a research laboratory/organisation on the condition that he will have to obtain a Doctor's degree or give evidence of research work of equivalent high standard within five years of his appointment, failing which, he will not be able to earn future increments until he fulfils these requirements.

(ii) Specialisation in Surface Chemistry, Polymer Chemistry, Electro-Chemistry or Calorimetry.

(iii) Experience in lecturing and con-

ducting advanced practical work in Physical and Inorganic Chemistry.

7. Singhanee Lecturer in Chemical Engineering

A good academic record with a doctorate degree in Chemical Engineering.

OR

A good academic record with first or or high second class Master's degree in Chemical Engineering or an equivalent degree with at least one year's research or professional experience. Specialization in the field of mass transfer/fluid mechanics/instrumentation and process control will be desirable.

Two copies of the application (separate for each post), in the prescribed form, which can be had from the Registrar's Office (Room No. 121) should be submitted to the Registrar, University of Bombay, Bombay-400032 so as to reach him on or before **25th January, 1979**.

Candidates called for interview will have to present themselves at their own expense.

Canvassing, direct or indirect, will be a disqualification.

**P.S. Sawant
OFFG. REGISTRAR**

UNIVERSITY OF KERALA

Trivandrum

Ad. DII. 2. 4804/76

NOTIFICATION

Applications are invited from qualified candidates for appointment as Reader in Economics in the University Department of Economics, Kariavattom Trivandrum.

Scale of pay: Rs 850-1450.

Details regarding qualifications age etc. and the prescribed application forms can be had from the Deputy Registrar (Admn.) University of Kerala, Trivandrum on payment of Rs 2/ by chalan to "KUF" account or crossed postal order drawn in favour of the "Finance Officer University of Kerala, Trivandrum."

The last date for receipt of application is **15.1.1979**.

**C.K. Devassy
REGISTRAR (Officiating)**

UNIVERSITY OF POONA

Ganeshkhind, Poona-7

No. BUTR/SO/24575.

Dated December 14, 1978.

Addenda to the notification No. BUTR/S. O/23760 dated 27th November, 1978, inviting applications for different teaching posts in the University.

Add under (A) University Departments post of (31) Lecturer in German (One) (32) Lecturer in French (One).

The last date for receiving duly completed applications for these two posts only will be **Saturday, the 20th January 1979**.

All other conditions, scale of pay etc. are the same as stated in the said Notification.

**G.J. Abhyankar
REGISTRAR**

**BANARAS HINDU
UNIVERSITY
Varanasi**

Advertisement No. 6/1978-79

Applications are invited for the under-mentioned posts. The benefit of Provident Fund/Pension, Dearness Allowances, House Rent Allowance and City Compensatory Allowances are admissible according to University Rules. The retirement age of University employee is 60 years. The appointment will be made on two years probation on all permanent posts. Higher starting salary within the grade is admissible to specially qualified and experienced candidates.

Applications will be entertained on the prescribed form duly supported with a Bank Draft or crossed Indian Postal Orders for Rs 7.50 in favour of the Registrar, Banaras Hindu University, towards the application fee. Application forms along with the leaflet of information will be supplied free of cost by the Registrar (Selection Committee Section), Banaras Hindu University, Varanasi-221005, on receipt of Re. 0.55 paise stamped self-addressed envelope of 23 cm. x 10 cm. size. Candidates called for interview for those posts will be paid actual Railway fare by the Second Class plus reservation charges for sleeper, if paid, and/or actual Bus fare from the present residence both ways by the shortest route as per University Rules. No other expenses will be paid.

Applications for each post be sent separately along with attested copies of certificates in support of the qualifications and experience mentioned in the application be addressed to the Registrar (Selection Committee Section) Banaras Hindu University, Varanasi-221005.

Incomplete application in any respect will not be entertained for consideration.

Those who are in service should apply through proper channel. M.O. or Cheque will not be accepted towards the application fee.

For the posts of Lecturers, other things being equal, preference will be given to Scheduled Caste/Scheduled Tribes candidates who are considered fit.

Applicants may send their bio-data along with attested copies of all the certificates and details on plain paper alongwith the application fee of Rs. 7.50 in Bank Draft/IPO to avoid delay, in case they do not get the prescribed form in time.

Last date for receipt of application is **January 8, 1979**.

Grade

Professor: Rs. 1500-60-1800-100-2000-125/2-2500

Reader: Rs. 1200-50-1300-60-1900

Lecturer: Rs. 700-40-1100-50-1600

1. Professor of Arabic (One)
2. Professor (Experimental Spectroscopy) (one).
3. Professor (Plant Ecology) Department of Botany (One).
4. Professor (Musicology) (One).

Qualifications: An eminent scholar with published work of high quality, actively engaged in research. Ten years' experience of teaching and/or research. Experience of guiding research at Doctoral level. Or an outstanding scholar with established reputation who has made significant contribution to knowledge.

5. Reader (Veda and Puranic Religions) (Dept. of A.H.C. & A.) (one).
6. Reader in Bengali (One).
7. Reader (Linguistics) (Deptt. of English).
8. Reader (One in Econometrics and the other in Macro-Economics) (Two) (Deptt. of Economics).
9. Readers in History (Two) (Deptt. of History).
10. Reader in Psychology (Two) (Deptt. of Psychology).
11. Reader (One) (Deptt. of Chemistry) (Metabolism, Neurochemistry, Membranes or Enzymology).
12. Reader (Ecology) (One) (Deptt. of Zoology).
13. Readers (Two) (Deptt. of Mathematics) (Applied Statistics/Operational Research/Demography).
14. Reader (One) (Veda/Jyotish) (Faculty of O.L. & T.).

Qualifications: Good academic record with a Doctoral Degree or equivalent published work. Evidence of being actively engaged in: (i) Research, or (ii) innovation in teaching methods, or (iii) production of teaching materials. About five years' experience of teaching and/or research provided that at least three of these years were as Lecturer or equivalent position. This condition may be relaxed in the case of candidates with outstanding research work.

15. Lecturer (one) Dept. of Arts & Architecture).
16. Lecturer (One) Dept. of Hindi).
17. Lecturer (One) (Vyakarna) (Dept. of Sanskrit and Pali).
18. Lecturer (One) (Japanese).
19. Woman Lecturer in Physical Education (One).
20. Lecturer (One) (Dept. of Journalism) (Rural Communication/Printing & Graphics).
21. Lecturer (One) (Dept. of Sociology).
22. Lecturers (Three) (Dept. of Chemistry) (Metabolism, Neurochemistry, Membranes or Enzymology).
23. Lecturer (One) (Jyotish) (Faculty of O.L. & T.).

Qualifications: (1) A Doctor's degree or research work of an equally high standard, and (2) consistently good academic record with first or high second class (B in the seven-point scale) Master's degree in the relevant subject or an equivalent degree of a foreign University.

Having regard to the need for developing inter-disciplinary programme, the degree in (a) and (2) above may be in relevant subjects.

Provided that if the Selection Committee is of the view that the research work of a candidate evident either from his thesis or from his published work is of very high standard, it may relax any

of the qualification prescribed in (2) above.

Provided further that if a candidate possessing a Doctor's degree or equivalent research work is not available or is not considered suitable, a person possessing a consistently good academic record (weightage being given to M.Phil. or equivalent degree or research work of quality) may be appointed provided he has done research work for at least two years or has practical experience in a research laboratory/organisation on the condition that he will have to obtain a Doctor's degree or give evidence or research work of equivalent high standard within five years of his appointment, failing which he will not be able to earn future increments until he fulfils these requirements.

Explanation: Candidates for being eligible for recruitment to the posts of Lecturers must have a first or high second class (B in the seven-point scale) at the Master's level and for determining consistently good record, average of 50-55% may be expected at the two examinations prior to the Master's examination.

24. Lecturer (Kathak) (Faculty of Performing Arts).

25. Lecturer (One) (Dance) (Mahila Mahavidyalaya).

Qualifications: 1. A first or high second class Graduate Degree or Diploma in Dance/Kathak of a recognised Institute of a reputed Dancer in the Art. 2. Good proficiency in performance for the post in Kathak and proficiency in some of the various types of Indian Dances for the post in Dance.

Note: Selection Committee will have the right to relax the essential qualifications in the case of a person who is renowned artist. 2. Other things being equal preference will be given to female candidate—for post No. 25.

All the above posts are for the period of Vth Five-year Plan but are likely to continue.

UNIVERSITY OF RAJASTHAN Jaipur

Advertisement No. 9/78
Dated 21st December 1978

Applications are invited (through proper channel in case of those already in employment) so as to reach this office on or before Monday the 22nd January, 1979 in the prescribed form available from the Registrar's Office on prepayment of Rs. 4 (Rs. 3 extra in case required by post) for the undermentioned posts (inclusive of the posts for the Institute of Correspondence studies and Continuing Education):

1. Professors: Hindi—2, History & Indian Culture—1, Economics—1, Sociology—1, Public Administration—1, Mathematics—1 and Jain Studies—1.
2. Readers: Psychology—1, History & Indian Culture—5, Economics—3, Public Administration—2, Geography—1, Chemistry—1, Mathematics—1, Geology—1 and Zoology—2.
3. Lecturers: English—3, Modern

European Languages (Russian)—1, Sanskrit—4, Psychology—1, Political Science—3, Philosophy—2, Geography—1, Home Science—2, Geology—3, Botany—9, Zoology—7, Jain Studies—1, South Asia Studies Centre—3, Economic—3, Sociology—3, Statistics—1, and Hindi—6.

These posts carry the following scales of pay:

1. Professors: Rs. 1500-60-1800-100-2000-125/2-2500.
2. Readers: Rs. 1200-50-1300-60-1900.
3. Lecturers: Rs. 700-40-1100-50-1600.

Details of qualifications, etc., may be obtained along with the prescribed application form or separately as the candidates may desire. Benefits of Provident Fund, D.A. and other allowances will be admissible as per rules of the University. Candidates desiring to apply for more than one post must send their separate application for each post. Candidates will be called for interview at their own expense. The essential qualifications for various teaching posts have been substantially revised in the light of the U.G.C. guidelines received after implementation of the revised pay scales. Persons who have already applied in response to various earlier advertisements of the University are also required to apply afresh.

Persons who resorted to irregular means at any examination and were punished therefor are not eligible to apply. Retired persons need not apply.

(i) The University reserves the right to alter the number of posts in any cadre or subject.

(ii) Higher start may be given to deserving candidates.

(iii) Selected candidates are liable to be posted in any unit of the University.

(iv) The University may consider anyone for appointment as Professor though he may not have applied for the post.

V.D. Qamra
REGISTRAR

PUNJABI UNIVERSITY Patiala

Advertisement No 244/SPS/Estt./78

Applications are invited for the following posts:

1. Professor in Journalism
(Rs 1500-60-1800-100-2000-125/2-2500)

Qualifications

An eminent scholar with published work of high quality actively engaged in research. Ten years' experience of teaching and/or research. Experience of guiding research at doctoral level.

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge.

Specialization

Degree or Diploma in Journalism from a recognised institution or University.

Professional experience of having worked in responsible and eminent positions in Journalism/Public Relations.

2. Chief Librarian

(Rs. 1500-60-1800-100-2000 OR
Rs. 1500-60-1800-100-2000-125/2-2500)

Qualifications

First or high second class Master's degree in Sciences/Social Sciences/Humanities and first or second Class Bachelor's degree in Library Science; or First or high second class Bachelor's degree in Sciences/Social Sciences/Humanities and first or second class Master's degree in Library Science.

Experience

Ten years' experience of working in a responsible position in an academic or research Library.

The pay-scale of Rs. 1500-2500 would be admissible only to a scholar of standing in any of the disciplines. To be eligible to this scale of pay, the essential qualifications would be:

- i. Good academic record with first or high second class Master's degree in a subject other than Library Science with a Doctorate degree or equivalent published work of high standard and preferably with experience of guiding research and with knowledge/experience of Library Services and management.
- ii. At least ten year's experience of teaching postgraduate classes and research; or of research in an independent capacity in an organisation of higher learning and research or in a responsible post in a Library for advanced students and research workers.

3. Readers in Law

(Rs. 1200-50-1300-60-1900)

Qualifications

At least a second class Master's degree in Law from a recognised University or its equivalent degree. Preference will be given to those who possess a Doctorate in Law.

Desirable

About five years experience of teaching and/or research, out of which atleast three years should be as Lecturer or in an equivalent position.

4. Lecturer in Law

(Rs. 700-40-1100-50-1600)

Qualifications

At least a second class Master's degree in Law from a recognised University or its equivalent degree.

Desirable

About three years experience of teaching/research out of which two years should be as a Lecturer or in an equivalent position.

5. Lecturers: (One each in English, Mathematics & Human Biology)

(Rs. 700-40-1100-50-1600)

Qualifications

- (a) A Doctor's degree or research work of an equally high standard in the relevant subject, and
- (b) Consistently good academic record with 1st or high 2nd class (B in the seven point scale) Master's degree in a relevant subject or an equivalent degree of a foreign University.
- (c) Qualifications prescribed in (b)

above are relaxable in case the research work of a candidate as evident either from his thesis or from his published work is of a very high standard. If a candidate possessing a Doctor's degree or equivalent research work is not available or is not considered suitable, a person possessing a consistently good academic record (weightage being given to M. Phil or equivalent degree or research work of quality) may be appointed provided he has done research work for at least two years or has practical experience in a research laboratory/organisation on the condition that he will have to obtain a Doctor's degree or give evidence of research work of equivalent high standard within five years of his appointment failing which he will not be able to earn future increments until he fulfils these requirements.

Specializations

- i. Lecturer in Human Biology
Social Anthropology.
- ii. Lecturer in English
Linguistics and Critical Theory.
Additional Qualifications:
(a) M.A./Advanced diploma/research degree in linguistics.
(b) Interdisciplinary competence to relate linguistics to literary aesthetics.

Note: Knowledge of Punjabi is essential for Lecturer in Mathematics.

6. Research Fellow in Bhagwan Mahavir Chair (on a fixed salary of Rs. 400/- p.m.)

Qualifications

Good academic record with first or high second class M.A. in Prakrit or Sanskrit and/or a doctoral degree with a thesis on Jainism or evidence of research work of equivalent standard on Jainism. Knowledge of early literature of the Jainas is most desirable.

7. Research Scholar in the Guru Gobind Singh Department of Religious Studies (Tenable for two years in the first instance @ Rs. 400 p.m. all inclusive)

Qualifications

Candidate should possess at least second class master's degree in Religious Studies/Philosophy with atleast one year teaching/research experience after obtaining the Master's degree provided that the condition of experience may be relaxed in the case of first class M.A.'s provided further that a candidate with at least 50% marks both in B.A. and M.A. could also be considered in case no first class M.A. is available.

Only those with B+ academic record and with aptitude for research should apply.

8. Manager, University Press (Rs. 1100-50-1600)

Qualifications

1. Degree/Diploma in Printing Technology/Management.
2. 10 years professional experience in responsible position in a reputed printing press.
3. Conversance of the Labour Laws, ability to enforce quality control,

production control and cost control measures.

4. Knowledge of Punjabi upto matric standard or should acquire this qualification within six months as per govt. rules.

9. Confidential Personal Assistant

(Grade: Rs. 500-30-740/40-900+100 special pay)

Qualifications

At least a Bachelor's degree of a recognised University with a minimum of 10 years experience in a University/Government/affiliated college and connected with confidential work. Good speed in shorthand and typewriting and adequate knowledge of Punjabi essential. Minimum qualifications are relaxable in case of candidates found otherwise exceptionally suitable for the post.

General

Higher start within the grade admissible depending upon the ability and experience of the candidate. House rent and Dearness allowance, Provident Fund and Medical facilities according to the University rules.

Applications, complete in all respect on the prescribed form, accompanied by a crossed postal order worth Rs 5 (Rs. 2—for candidates belonging to Scheduled Castes/Tribes and Backward Classes) drawn in favour of the Registrar, Punjabi University, Patiala should reach the University by 10-1-1979. The forms can be had from the Superintendent (Establishment) by sending a self-addressed envelope of the size of 23x10 cms stamped with 25 paise postage.

Persons already in service should apply through proper channel; Govt. servants who are not in a position to submit their applications through proper channel before the due date should submit and advance copy before the due date and regular applications through proper channel by 12-1-1979.

REGISTRAR

UNIVERSITY OF DELHI Delhi

Advt. No. Estab. IV/56/78
Dated 22nd December. 1978

Applications on the prescribed form are invited for the following posts:

Department/Designation

Botany: Professors Three (One in the field of Cytogenetics/ Ultrastructure).

Readers-Three (Two permanent and one Temp. upto 4.10.1979). It is how likely that there may be some more permanent vacancies.

Lecturers-Two

Psychology: One Professor

Commerce: One Professor (temp. upto 20.11.1981)

History: Two Professors

Two Readers

Physics: Readers (three permanent and a few temporary vacancies)
Lecturer-One

Campus Law Centre: Two Readers (Temp. one upto 31.8.80. and the other upto 19.10.1980)

Philosophy: One Reader with specialization in Philosophy of Science, Philosophical Methodology & Techniques.

Sociology: Two Lecturers (temporary against leave vacancies)

Sanskrit: One lecturer temp. upto 5.10.1979)

Modern European Languages: One Lecturer in Russian

Mathematical Statistics: One Lecturer (temp. upto 31.10.1980)

Operational Research: One Lecturer

Persian: One Research Associate

Central Office: One Public Relations Officer, One Deputy Registrar (for South Campus)

Three Clerk-typists in Russian

Chemistry: Two Technical Assistants (Temp.) (One each reserved for SC/X.S)
The scales of pay of the posts are:

Professor Rs. 1500-60-1800-100-2000-125/2-2500.

Reader Rs. 1200-50-1300-60-1900.

Lecturer Rs. 700-40-1100-50-1600.

Dy. Registrar Rs. 1100-50-1600.

Technical Assistant Rs. 425-15-500-EB-15-560-20-700.

Public Relations Officer Rs. 700-40-900-EB-40-1100-50-1300

Clerk-typist in Russian Rs. 260-6-290-EB-6-326-8-366-EB-8-390-10-400.

Research Associate: Consolidated Monthly emoluments as under:—

A — Rs. 1000/- p.m.; B — Rs. 1200/- p.m.; C — Rs. 1400/- p.m.; (Fixed). (on the recommendation of the Selection Committee).

All posts except that of Research Associate, carry D.A., C.C.A. and H.R.A. admissible under the rules in force in the University from time to time.

ESSENTIAL QUALIFICATIONS FOR

Professorship

A Scholar of eminence.

Independent published work of high standard & experience of teaching Post-graduate classes and guiding research for a considerable period desirable.

Readerships

Good academic record with first or high second class Master's Degree in the subject concerned with Doctor's Degree or equivalent published work.

Independent published work (in addition to the published work mentioned above) with atleast 5 years' teaching experience in Honours/Post-graduate classes essential.

Lecturerships

Good academic record with first or high second class Master's Degree or an equivalent degree of a foreign University in the subject concerned.

Note: Second class would mean atleast 50% marks in the subject or equivalent grade).

Desirable: (i) A Doctor's Degree or Evidence of Research work of equivalent standard in the subject concerned. (ii) Teaching experience of Degree/Post-graduate Classes.

Provided if a teacher is not a Ph.D./M.Phil./M.Litt. at the time of his/her appointment and does not qualify himself/herself for the award of Ph.D./M.Phil./M.Litt. Degree from a recognised University in a subject which is being taught by him/her within a period of five years from the date of his/her appointment or does not give evidence of research work within that period in the subject concerned, he/she shall not be entitled to any future increments after the expiry of the said period of five years till such time he/she fulfils the above mentioned requirements.

Research Associateship

Good academic record with first or high second class (B+) Master's degree or an equivalent degree of a foreign University in Persian.

Note: Initial appointment will be for a tenure period of three years extendable by another two years only. In no case the tenure will extend beyond 5 years in all.

Public Relations Officer

A second class Master's degree with Diploma in Journalism and experience of journalism and publications/public relations work.

Deputy Registrar

A second class Master's degree and experience of Educational administration at the executive level for at least 8 years.

Technical Assistants

Graduate in Science.
Experience in Laboratory Techniques of the subject.

Clerk-typist in Russian

Matriculation with minimum speed of 35 w.p.m. in Russian typewriting.

Note: Candidates will be required to appear and qualify the prescribed tests in General English, Russian Language and Russian typewriting, to be conducted by the University.

SPECIAL/DESIRABLE QUALIFICATIONS FOR

Professorships in History

- i. Specialization in medieval Indian History.
- ii. Specialization in historiography/ancient India.

Readerships in History

- i. Specialization in British/European History. The candidates should produce evidence of research in any field of British/European History and should possess proficiency in an European Language other than English.
- ii. South Indian History and Culture. The candidate should have knowledge of early history of peninsular India and should possess proficiency in one of the South Indian languages.

Readerships and Lecturerships in Botany
Training and experience of research in interdisciplinary areas.

Lecturership in Sanskrit (Temp.)

Specialization in Vyakarana/Sahitya/Darshana and Epigraphy.

Lecturership in Russian

At least three years experience in Teaching. Experience in Technical translation.

Lecturership in Sociology

Candidates with familiarity with new developments in sociological theory and/or personal experience of field-work will be given preference

Research Associateship in Persian

Candidates having specialization in Indo-Persian literature will be given preference. Some experience in research work.

Deputy Registrar

Experience of University administration and familiarity with the working of University bodies and institutions including admissions, college administration, Accounts rules relating to fixation of pay and Inspection of Colleges.

Clerk-typist in Russian

Advanced Diploma in Russian or equivalent examination recognised by the Delhi University.

Some experience of handling books in foreign language particularly Russian/office work.

Preference will be given to those candidates who have good knowledge of English typewriting.

The prescribed application form can be had from the Information Office of the University either personally or by sending a self-addressed envelope (size 5"×11") with postage stamps worth Rs. 2.80.

Selected candidates will have to produce the original documents relating to their age, qualifications, experience etc. at the time of interview.

Applications (separate for each post) accompanied by attested copies of Degrees, other certificates, mark-sheets, published research articles, etc. should reach the under-signed not later than 15th January, 1979.

Note: 1. It will be open to the University to consider the names of suitable candidates who may not have applied in respect of teaching posts. Relaxation of any of the qualifications may be made in exceptional cases, on the recommendations of the Selection Committee.

2. Canvassing in any form by or on behalf of the candidates will disqualify.

3. Candidates from outside Delhi for teaching posts, called for interview, will be paid contribution towards travel expenses equivalent to 1½ single Second Class Rail Fare.

4. Those who have applied in response to the earlier advertisement (No. 43/44/45) for Public Relations Officer, Deputy Registrar, Professorship in Psychology, History, Readerships in History, Philosophy and Lecturership in Sanskrit, need not apply again but in case they have any additional information to supply, they may do so.

REGISTRAR

Need for self-reliance in agriculture

While delivering the convocation address at Sardar Patel University, Dr. H.N. Sethna, Chairman, Atomic Energy Commission, emphasised the need for self-reliance in agricultural and industrial sectors by tapping the unutilised resources to enable the country to attain economic liberation. The agricultural sector would have to play a dominant role in uplift of standard of living of the weaker section of society. He suggested that we must simultaneously embark upon revitalising our small scale industry to promote a healthy growth of economy and to make use of large labour force.

Dr. Sethna said that agriculture in our country was not labour-intensive but labour-extensive. He maintained that if we were lagging behind the developed world, it was because of social structure that governed it and not due to lack of resources. He informed that Indian Council of Agricultural Research and Bhabha Atomic Research Centre had conducted a series of experiments to increase yield per hectare. Radiation for agriculture production was being used extensively. Dr. Sethna said use of radiation for preservation of food and other agricultural products on commercial scale would be of immense value and save a sizeable amount of investment and electricity.

Earlier, Dr. R.M. Patel, Vice-Chancellor of the University, conferred honorary degree of Doctor of Literature on eminent Gujarati poet Shri Umashankar Joshi.

National environment fellowships

The Union Government have instituted National Environment Fellowships for undertaking advanced studies leading to better understanding of problems concerning environmental conservation. The fellowships will be tenable for a duration of two years extendable to three years in exceptional cases. The fellowship carries an award of Rs. 2,500/- per month with Rs. 5,000/- as contingent expenditure every year.

A.I.U. PUBLICATIONS

	(Rs.)
1. Universities Handbook—1977	140.00
2. Handbook of Medical Education—1978	10.00
3. Association of Indian Universities—History	50.00
4. Higher Education and Development	30.00
5. University Finance—A Statistical Profile	50.00
6. Enrolment in Higher Education—A trend analysis	20.00
7. Resource Allocation on Education—Research Studies	20.00

Bibliography of Doctoral Dissertations

8. Social Sciences	50.00
9. Humanities	100.00
10. Physical Sciences	125.00
11. Biological Sciences	100.00
<i>Note : Also available in paperbacks in individual discipline</i>	
12. Social Sciences & Humanities 1970-75	125.00
13. Social Sciences & Humanities—1975-76	50.00
14. Natural & Applied Sciences—1975-76	90.00

On Examinations

15. Towards Better Questions	5.00
16. Monograph on Grading	5.00
17. Monograph on Question Banking	5.00
18. Monograph on Internal Assessment	6.00
19. Monograph on Test & Item Analysis	10.00
20. Monograph on Question Banking in English Language & Literature	6.00
21. Management of Examinations	35.00
22. Research Abstracts—Part I, II & III	each 6.00

Question Bank Book Series

23. Mathematics	35.00
24. Physics	20.00
25. Chemistry	30.00
26. Zoology	25.00
27. Botany	20.00
28. History	15.00
29. Geography	15.00
30. Psychology	25.00
31. Economics	25.00
32. Commerce	25.00
33. Political Science	22.00
34. Foods & Nutrition	25.00

Sports & Physical Education

35. Handbook of Rules & Regulations for Inter-University Tournaments	7.50
36. Gymnastic Exercises for Men	5.00
37. Gymnastic Exercises for Women	5.00
38. Gymnastic Exercises for Men & Women	10.00

Address enquiries to:

Association of Indian Universities

Rouse Avenue, New Delhi-110002

UNIVERSITY

NEWS

WISHES

ITS

READERS

A

HAPPY

NEW

YEAR

Ride a London bus for Rs. 6650.
Eat Italian style for Rs. 5850.
Pat a fat Swiss cow for Rs. 6590.
Smile back at Mona Lisa for Rs. 6600.

Rome. Geneva. Paris. London.
And more cities on our round trip
Excursion fares. Milan, Rs. 6099.
Brussels or Prague or Warsaw, Rs. 6600.

All Europe Excursion fares
are valid for 14 to 90 days and allow
one stopover. The India-U.K. fare
is valid for 21 to 90 days and allows
one stopover if you pay Rs. 7350.

All Excursion fares are
ex-Bombay/Delhi. For other details,
contact your travel agent or Air-India.



AIR-INDIA

Something good going for you

University News

FORTNIGHTLY CHRONICLE OF HIGHER EDUCATION & RESEARCH JANUARY 15, 1979



Prof. Sadanand Varde, Maharashtra Education Minister, delivering the convocation address at the SNDT Women's University. Shri Sadiq Ali, Chancellor of the University, Dr. (Smt.) Madhuri Shah, Vice-Chancellor and Smt. Sharda Divan are also seen in the picture.

UNIVERSITY OF RAJASTHAN Jaipur

Advertisement No. 10/78

Applications are invited (through proper channel) in case of those already in employment so as to reach this office on or before Monday, the 22nd January, 1979 in the prescribed form available from the Registrar's office on pre-payment of Rs 4/- (Rs 3/- extra in case required by post) for the undermentioned posts:-

Registrar-1, Controller of Examinations-1, Dy. Registrars-2, Asstt. Registrars-5, Librarian-1, Dy. Librarians-2, Asstt. Librarians-5, Director/Asstt. Director of Physical Education-4, X-Ray Analyst in Geology-1, Micro Analyst in Chemistry-1, Asstt. Director in Adult Education-1, Psychological Counsellor-1, and Public Relations Officer-1.

These posts carry the following scales of pay:-

1. Registrar: Rs 1400-50-1650-60-1830-70-1900
2. Controller of Examinations
Rs 1250-50-1700
3. Dy. Registrar: Rs 1150-50-1650
4. Asstt. Registrar: Rs 750-30-1020-40-1300-50-1350
5. Librarian: Rs 1100-50-1300-60-1600 (Pay scale likely to be revised).
6. Dy. Librarian: Rs 700-50-1250 (Pay scale likely to be revised)
7. Asstt. Librarian/Director/Asstt. Director of Physical Education/X-Ray Analyst in Geology/Micro Analyst in Chemistry/Asstt. Director in Adult Education/Public Relations Officer and Psychological Counsellor: Rs 400-40-800-50-950 (Pay scale likely to be revised).

Persons who have already applied in response to our earlier advertisement (s) for any of the aforesaid posts, are also required to apply afresh.

Details of qualifications etc. may be obtained along with the prescribed application form or separately as the candidate may desire.

The University reserves the right to alter the number of post in any cadre. Benefit of Provident Fund and other allowances will be admissible as per rules of the University. Candidates desiring to apply for more than one post must send their applications separately for each post. Candidates will be called for interview at their own expense.

Retired persons need not apply.

V.D. Qamra
REGISTRAR

JAWAHARLAL NEHRU UNIVERSITY New Delhi-110067

Advertisement No. Aca. III/14/78

Applications are invited for the following posts:

SCHOOL OF INTERNATIONAL STUDIES

Centre for South-East and Central Asian Studies.

1. Documentation Officer in South-East Asian Studies

QUALIFICATIONS

Essential

- (a) A first or second class Master's Degree in one of the Social Sciences from an Indian or foreign University
- (b) Five years experience of research

and documentation.

Desirable

- (a) Knowledge of Indonesian, Malay or Vietnamese Language.
- (b) Field work in South-East Asia for academic purposes.

SCHOOL OF LANGUAGES

Centre of German Studies

2. Assistant Professors

QUALIFICATIONS

Essential

- (a) Consistently good academic record with at least a high second class Master's degree in German or an equivalent qualification from an Indian/Foreign University.
- (b) A doctor's degree or published work of an equally high standard.

Provided that if the Selection Committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard, it may relax any of qualifications prescribed in (a) above.

Provided further that if a candidate possessing a Doctor's Degree or equivalent research work is not available or is not considered suitable, a person possessing a consistently good academic record (weightage being given to M.Phil or equivalent degree or research work of quality) may be appointed provided he has done research work for at least two years or has practical experience in a research laboratory/organisation on the condition that he will have to obtain a Doctor's Degree or give evidence of research work of equivalent high standard within five years of his appointments failing which he will not be able to earn future increments until he fulfils these requirements.

Desirable

- (a) A very high degree of fluency in written and spoken German.
- (b) Some experience of teaching German as a foreign language to specified groups.
- (c) High degree of proficiency and specialisation in either German literature or translation-cum linguistics.
- (d) Post M.A. Certificate in teaching German as a foreign language from CIEFL, Hyderabad.
- (e) Experience in materials production.

SCHOOL OF SOCIAL SCIENCES

Centre for Economic Studies & Planning

3. Associate Professor/Fellow in Economics

QUALIFICATIONS

Essential

- (a) Consistently good academic record with at least high second class Master's Degree in Economics or its equivalent qualification from an Indian/Foreign University.
- (b) A Doctor's degree or published work of an equally high standard.
- (c) About five years experience of teaching and/or research.

Specialisation: Micro-Economic Theory/Money and Banking with special reference to India.

Centre for the Study of Social Systems

4. Associate Professor/Fellow in Sociology (Research Methodology)

QUALIFICATIONS

Essential

- (a) Consistently good academic record with at least a high second class Master's degree in Sociology or an equivalent qualification from an

Indian/Foreign University;

- (b) A doctor's degree or published work of an equally high standard.
- (c) About five years experience of teaching and/or research.

Desirable

- (a) Training in quantitative methods and mathematics;
- (b) Experience of teaching courses in sociological methods from the perspective of theoretical sociology.

SCALES OF PAY

Associate Professor/Fellow

Rs 1200-50-1300-60-1900

Assistant Professor

Rs 700-40-1100-50-1600

Documentation Officer

Rs 700-40-1100-50-1300

plus usual allowances as admissible to the members of the staff in the Central University.

Relaxation in any of the qualifications may be made (a) in favour of persons of eminence or of high academic professional distinction, and (b) in exceptional cases where adequately qualified persons are not available but are otherwise found suitable for the respective positions. It will also be open to the University to consider the names of suitable candidates who may not have applied.

The selected candidates will be expected to participate in the teaching and research programmes in the concerned disciplines in other Schools of the University as well as in the programmes offered in their own Centres of Studies.

Normally appointment of Fellows is made on contract basis for a period ranging from one to three years.

Benefits of C.P. Fund-cum-Gratuity/G.P. Fund-cum-Pension-cum-Gratuity are available as per University rules.

Persons already in employment should route their applications through proper channel.

Due consideration will be given to candidates belonging to SC/ST at the level of Assistant Professor.

Second class (mail) rail fare (both ways) will be paid to candidates invited to appear for interview from outstation by the shortest route subject to the production of rail receipt.

Applications, separate for each post, on the prescribed form, obtainable free of cost from the University by sending a self-addressed and stamped envelope of 23 cm x 10 cm. size to the Deputy Registrar (Academic) Jawaharlal Nehru University, New Mehrauli Road, New Delhi-110067., should reach him latest by 27th January, 1979.

Candidates from abroad, applying for faculty positions, may apply on plain paper, (but their applications should reach the University by the last date furnishing all the relevant informations such as their names, date and place of birth, marital status nationality; state of domicile; postal and permanent addresses; father's name and address; academic and professional attainments; full details of (a) publications, and (b) research projects undertaken; language (s) known; details of visits to foreign countries; and the name and addresses of at least two persons well acquainted with the candidates professional work who should also be requested by the candidate to forward to the Deputy Registrar (Academic) confidential report concerning the candidate.

UNIVERSITY NEWS

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*Opinions expressed in the articles
and reviews are individual and do
not necessarily reflect the policies
of the Association*

Hony. Editor : ANJNI KUMAR

NSS Needs Proper Orientation

S. P. Mukherjee*

The National Service Scheme (N.S.S.) has been a laudable effort to bring college and University students closer to the general community (particularly to those sections of the community which needs service most), to instill in them a sense of commitment to the community and to give them a taste of social work—what it means and what it needs. The recurring expenditure on this scheme cannot be judged as meagre by any standard and the emphasis being currently placed on social welfare merits an investigation into the objectives of this scheme and into programmes being currently undertaken to achieve these objectives.

The N.S.S. should not be construed as an institution for training social workers or for organising social work. The aim of this scheme should not be to ensure involvement of students in some sense in some service programme but to inculcate in them the will to serve and to equip them with some skill to serve so that in future they can wield whatever power (social status, financial strength or political following) becomes available to them for social work.

Most N.S.S. activities are by way of camps (usually organised during vacations) in rural areas for such works as (unmetalled) road construction, literacy/health campaign, vaccination/innoculation programme etc. Thus they belong to both the sectors namely production and service. It is quite easy to raise high expectations among rural folks—predominantly poor and uneducated—about outcomes of N.S.S. programmes undertaken in their areas and subsequently to cause their frustration and invite their indifference, if not ire.

While none else can be more welcome to the society than a zealous social worker, an N.S.S. college teacher who is more than motivated to serve the society and to inspire students in that noble cause may find less of time and interest left to him to pursue studies required by his primary occupation. Similarly the N.S.S. programme is not meant to withdraw students from the system of collegiate education by involving them in social works and related programmes to an extent that could stand in the way of their studies. It would be, however, quite beneficial to the society if those who joined the higher education system under pressure and did not have necessary attitudes and aptitudes better drop out of the system of collegiate education and join some social service programme.

Speaking of social service or service to society, it is relevant to take into account three aspects of the task namely (i) will to serve, (ii) skill to serve and (iii) power to serve. A student has to be first motivated to identify problems of others and to serve for their

(Continued on page 48)

*Reader in Statistics, Calcutta University.

Science and Technology Policies Information and Exchange System

B. M. Gupta*

Over the past two decades, increasing importance has been given to science policy both as an aspect of government and academic activities. New or reformed national science policy-making bodies are established as a part of Government machinery. UNESCO has identified some 400 of them in its member states. Teaching and research units are springing up in the universities and other institutions of higher learning; more than 350 has been listed in one of the surveys conducted by UNESCO in Europe and North America. In addition, specialised groups, committees etc. dealing with these problems are emerging in or in close collaboration with national parliaments. At the same time, managers and specialists working in the field are encountering a constantly increasing demand for information which is very difficult for them to satisfy because of the :

(i) Difficulty of acquisition

- Many countries have no national information infrastructure (documentation services or data bank) in the field;
- the information is spread over numerous disciplines and is disseminated in a wide range of documents;
- rather sharp barriers exist in this field between the specialists of different countries or regions;

(ii) Difficulties of selection and use

- Users are inundated with material which is irrelevant or of little value, owing to the growing output of literature in this field, and which is often unusable because it rapidly becomes obsolete;
- the field is steadily widening and the character of information is often highly technical; hence it is difficult to locate the expert knowledge and advice necessary for the interpretation and use of valid information.

In short, in order to meet the above situation of the exchange of information on the application of science and technology to development, UNESCO is attempting to set up a selective and economical computerised system for information exchange among its Member States, which will collect, select, analyse, store, retrieve and disseminate documents and factual data on policies aimed at the overall advancement of science and technology and at their practical implementation with a view to the economic and social progress of countries.

Past activities in this area

In the past, a few isolated attempts have been made to create information systems in this field at a national level but most of them failed because of number of factors such as "critical size". There exists, however, in a few countries, classical documentation services providing bibliography lists or newsletters (examples are the monthly bibliography issued by the Soviet Socialist Republic Academy of Sciences, and the MIT Bulletin), but they are generally limited in coverage and scope and do not respond to the urgent needs of developing countries. At the international levels, existing channels and services do not allow for compatible exchange of selected information on ongoing R & D projects and on development projects calling for the application of S & T.

Official support and developments

Several international instances including the General Assembly and the Economic and Social Council of the United Nations have drawn the world's attention to the present deficiencies of the international information exchange on the management, transfer, assessment and application of science and technology.

Quite naturally, these growing requirements were first acknowledged by UNESCO within the United Nations System, because of the organisation's involvement in normative and operational activities pertaining to science and technology policies. Way-back in 1970, the General Conference of UNESCO adopted resolutions 2.131, 2.12 and 2.121 at its fifteenth, sixteenth and seventeenth sessions mentioning the exchange of information in the field of science and technology policies. This resolution was soon followed by the first preparatory steps undertaken by the Secretariat towards the progressive establishment of a worldwide information exchange system known under the acronym SPINES; in the field of policy-making and management of science and technology, in particular their application to development.

As far as Unesco is concerned, the following main steps preparatory to the establishment of SPINES were achieved by the time of 18th session of the General Conference :

- (i) Compilation of a science and technology policies thesaurus;
- (ii) a provisional world list of periodicals dealing regularly or occasionally with science and technology policies;
- (iii) a feasibility study on the managerial, technical, legal, financial framework for the setting up of SPINES;

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CSIR, New Delhi.

- (iv) surveys of the users and the amount of literature produced in each year in the field of science and technology policies.

"At its eighteenth session, the General Conference of Unesco invited the Director-General to organise a meeting of government experts with a view to preparing a report and a proposal for a resolution, to be examined by the General Conference at its nineteenth session, on the establishment of SPINES, in accordance with the recommendations of the UNISIST programme" (para (a) of resolution 2.123).

The meeting of experts was preceded by three Consultations organised in spring 1975 by the Secretariat of UNESCO, with : (i) the National Commissions for Unesco of all Member States. Here out of 57 replies received, 40 were favourable, 10 unfavourable, 5 not in a possible to reply and 2 not yet to participate ; (ii) The Int. Council for Science Policy Studies—which welcome this move and passed a resolution also at its first session (Berlin, GDR, 14 April, 1975); (iii) the Members of UNISIST Advisory Committee—which generally expressed their satisfaction with the technical design of the SPINES system, as proposed in the Feasibility study (of para 2.1.1). After these consultations, the meeting of 16 Govt. experts took place in Oct. 1975. A formal and unanimous consensus emerged at the end of meeting to recommend to the Director-General the launching of a SPINES prototype programme during the period 1977-82 and following the recommendations formulated by the meeting of Govt. experts, the General Conf. of Unesco, at its nineteenth Session (Nairobi, Nov. 1976), adopted the following resolution by 45 votes in favour, 1 against and 8 absentions: "2.123 : The General Conference, *Authorises* the Director-General to initiate a pilot programme for the international exchange of information on the application of science and technology to development in Member States, with particular reference to literature and basic data which have a direct bearing on policy-making, management, transfer and assessment in the field of science and technology".

Operational features

The SPINES has been conceived as a decentralised information system for information exchange between Member States and will comprise:

- (i) a Central Processing Group (CPG) which would be an autonomous body preferably located outside Unesco and established under agreement between Unesco and host Member States or international organisations.
- (ii) Several National/Regional Units serving as relays allowing for the participation volunteer countries in the input of SPINES.

Subject scope

The present system while delimiting the areas have taken into account the theory and practice of science and technology policy-making and management and its application to development as developed in recent years in various countries and definitions provided by International Commission on Science Policy Studies. This approach is further supplement-

ed by the experience of Unesco Secretariat which has been making extensive surveys and analysis in this field for the past one decade or more. The total areas covered in this system can be broadly divided in the following four major fields:

- (i) Foundations of science and technology (development of theories, standards and methods with a view to science and technology making);
- (ii) science and technology resources (human, financial and institutional resources, information and facilities for R & D activities and for the activities of scientific and technological services;
- (iii) practice of science and technology policy—making (science and technology planning; programming, budgeting and forecasting; assessment and transfer of technologist; R & D management;
- (iv) contents of plans and programmes and projects related to scientific and technological activities.

Constitution & composition

SPINES will be maintained and operated jointly by Unesco and Member States. To begin with it is expected that about 8 to 10 members will be participating in the SPINES programme, selected on the basis of their large output, their experience, and the facilities available with them.

Input to the system

Responsibility of the Input: The National/Regional Units will be responsible for the input generated in their respective geographical regions while the CPG will have the responsibility of the literature generated by International organizations.

Type of Input: The system will cover both factual data and documents. Under the first type, the type of information can be nominal, numerical and perceptual data, statistics, indicators, etc. In the second category, two types of documents will be covered. Conventional (books, periodicals, laws and regulations) which are easily available through commercial channels or government and official publishers and Non-conventional (Conference proceedings, newsletters, thesis) which are not easily available through normal commercial channels.

Selection of the input

The selection of the input has to be made by the respective inputting centre on the basis of the following three criteria:

- (i) *Geographical criteria* : Is the document to be inputted falls within the geographical area to which the input unit is responsible;
- (ii) *Subject criteria*: Does (all or part) of the document to be inputted falls within the proposed subject category codes of SPINES;
- (iii) *Quality criteria* : Does the information content of the document to be inputted to the system is worthwhile. Here the proposed quality indicators are:

- amount of new information contributing to overall scientific knowledge;
- durable or ephemeral character of information (especially for progress reports);
- general or specialized character of information;
- scientific character of augmentation;
- reputation of the author or sponsoring organization;
- standard of the journal in which information is published.

Contribution of various member states

The estimated world number of references per annum in the field is about 31500 as estimated by Unesco Secretariat (STP) Survey conducted in 1973. This does not include the literature produced by science-based enterprises. This estimated output when distributed according to graphical and culturing grouping, language and type of documents is as follows:-

Region	References		Language	References		Form	References	
	No.	%age		No.	%age		No.	%age
Europe	16430	52	English	12940	41	Articels in Periodicals	17280	55
North America	7250	23	French	3670	11	Non-conventional Literature	5790	18
Asia	2460	8	German	2570	8	Books	5600	18
Africa & Arab States	2070	7	Russian	1780	6	Laws & Regulations	2810	9
Latin America	1270	4	Spanish	1630	5			
International Organization	2000	6	Other Languages	8890	28			
Total :	31480	100		31480	100		31480	100

Physical media of the input

There are two media for the input, namely; Worksheets and Magnetic tapes. The first one will be used in those cases where the necessary computer facilities are not available. If we look at the structure of the worksheet, it can be divided into two parts. In the first part, first few fields are given to the identification of record which the worksheet is creating. They are not strictly bibliographical elements. The input centre and the language of the document are to be indicated by codes. The year at the header is to be the year during which record is made. The number here is to be assigned serially by the input centre preparing the record. After the header, the fields are to contain bibliographical elements upto field 131. The second part of the worksheet contains elements which are relating to the contents of the documents.

They are more in the nature of document representation in sharp contrast to document description in the first part. In this category comes the abstract

which is to be in the language of the document. Provision for a second abstract in another language is also there. The subject content of the document is to be indicated by a set of descriptors to be chosen from the SPINES thesaurus. There is a provision for maximum 15 descriptors. The last field (Tag 160) is to contain category code(s). More than one category code is permissible for the same document.

Maintenance of standardization in the input

This will be achieved through following devices:
(i) Creating a series of manuals and guides; and
(ii) by organizing a series of training programmes for different type and level of persons involved in inputting the required input.

Training

It is planned that the CPG will organize in collaboration with Regional Units on a regular basis training programmes, seminars covering the cataloguing routines, indexing and abstracting supplemented

by periods of practical work in close co-operation with Unesco on a regular basis.

Creating a series of basic standards, manuals and guides

The creation of these basic standards, manuals and guides is very important and necessary both for the input units and user's of the system as to achieve the maximum standardisation and consistency. Some of these tools infact require revision after long intervals like basic standards while others require fairly regular revisions such as guides. So far the following basic standards and guides have been prepared under the SPINES programmes:

(A) Thesaurus

It is a controlled and structured vocabulary which contains approximately 10,500 terms, of which two-thirds are authorised descriptors, linked by a network of more than 74,000 semantic relations. In order to assist the users in selecting appropriate descriptors, looking at the subject from several

angles, this vocabulary is presented in two complementary forms: (i) an alphabetical structured list in which all the terms (descriptors or non-descriptors) are shown alphabetically accompanied by all their relations; (ii) 34 terminological graphic displays (or charts) sharing the whole conceptual coverage of the SPINES thesaurus between them and showing in a two-dimensional plane all the terms of the thesaurus in the context of their semantic relationships.

(B) Provisional world list of periodicals dealing with science & technology policies (1974)

The list is compiled by Unesco Secretariat and contains about 1200 periodicals, published in 1977 of its Member States; which deal regularly with science and technology policies. The list has been published in the form of provisional directory in 1974.

(C) Draft SPINES subjects categories (1976)

(D) Science and technology policies information exchange system

A Feasibility Study (1974). The purpose of this study was to define the managerial, technical, legal and financial framework of SPINES.

Central processing

The CPG will be responsible for

- (i) checking and correcting the input received from the respective input centres;
- (ii) the transfer into machine-readable medium of:
 - the literature from international organisations;
 - the literature not transferred by National/Regional Units.
- (iii) merging the total input into a common machine readable form and the subsequent generation of products which will be sent to various Member States directly for further utility and dissemination.

Output of the system

CPG

The CPG will have the responsibility of generating and providing the following products and services:

(i) Machine-readable Tape

This tape contains information of the total input to the system at a particular period of time. A copy of this will be supplied free to each Member State;

(ii) SPINES bulletin

This is an abstracting service containing the information inputted into the system at a particular period of time. This will be brought out at a fixed interval and a copy of this will be supplied free to each Member State;

(iii) Text of original documents of international organizations in microfiche form

This will be supplied to each Member State and individual users at a nominal cost/price on request.

Regional units/national units

Based on the products received from CPG, the

respective RUs/NUs will provide services like:

- SDI Services based on interest profiles of users
- Bibliographical services both current and retrospective.

However, for the effective utilisation of CPG output, necessary computer facilities both in terms of hardware/software should be available with each inputting centres, an area normally lacking in developing countries. Here CPG can play an effective role by commissioning certain manuals and providing necessary guidance and computer software packages such as for current literature search, retrospective search, query formulation techniques, et al. In addition to this, those NUs/RUs will supply documents (one copy or microfiche) of each document on request at cost price to individual users. □

Advertisement

**SHIVAJI UNIVERSITY, KOLHAPUR
(Maharashtra State)**

Applications are invited for the following posts :

1. **Professor** : One in Education.*
2. **Readers** : Two in Education*, One each in Maratha History, Botany (Cytogenetics & Plant Breeding) and Organic Chemistry (The post in Organic Chemistry will be for a period of three years only).
3. **Lecturers** : Three in Education*, One each in Economics, Russian and Physics (Solid State Physics/Theoretical Solid State Physics/Materials Science/Electronics/Spectroscopy).
The post of physics is for two years in the first instance.

***Qualifications for the Posts in Education Department**

i) B.A. and M.A. Degrees in I or II class in Education, Philosophy, Psychology and Sociology; OR M. Ed. Degree in I or II class; and (ii) Ph. D. Degree or experience of research, innovative work and experimentation, and extension work in the fields of Education. Candidates selected will have to do training in M.A. (Education), M.Ed. and M. Phil, guide research with interdisciplinary approach, organise extension work and community programmes and undertake innovative work.

Note : Applicants should clearly indicate the post for which they apply.

Qualifications for the Post of Lecturer in Russian

i) M.A. in Russian Language as essential qualification; (ii) A Diploma in Foreign Language from CIEFL or its equivalent as desirable.

For details in other respects and for qualifications for other posts please see our advertisement published in Hindu Madras dated 12-11-78/ Hindustan Times-New Delhi dated 14-11-78/Indian Express-Bombay dated 11-11-78 and Kesari-Poona dated 12-11-78 or write to the undersigned.

Candidates should send I.P.O. of Rs 3-50 along with self addressed envelope with a postage worth 85 paise. Last date of receiving applications for the above posts is **5th February, 1979.**

No. SU/EST/PG/2078

Kolhapur,

Date : 27-12-1978.

**Usha Ichape
Registrar**

Improving Reading Activity in Colleges

A. P. Srivastava*

Around us today is the ocean of print due to knowledge explosion. A man must swim in this printed world for his very survival. Reading as a part of daily life expands the horizons of an individual's awareness. It makes one to see through numerous eyes, hear with many ears and think through abler minds. What a pity it is if a university graduate reads nothing after earning his degree. Such a person denounces his rare privileges and prefer to live in culture of silence. Reading as a habit is necessary in the practical management of our world—be it in an office, factory, court or any other unit. It is rightly believed that a true non-reader can only survive in a mental hospital. Our present day civilization is a paper and ink civilization. Modern man consumes a mountain of print before he dies. The consumption of print is for various purposes,—achieving more, organising better, amusement, enlightenment, better living, and even for escape. Yet, reading, as part of life, is still very much unattractive to majority of college graduates. Our literary and scientific heritage—the wit, wisdom and knowledge—is rightful possession of every adult educated citizen, but most of our countrymen still do not claim this inheritance. Reading is not only going through a printed page. It is an art of transmitting ideas, facts, feelings and decisions from the mind and soul of an author to the mind and soul of a person who reads.

Characteristics of good reading

Good reading involves three characteristics. The first is ability to read with ease, and casual reading for a university graduate should be quite effortless. It should be a matter of enjoyment rather than an ordeal. The second characteristic is ability to read rapidly. Ability to skim and to pick out relevant ideas goes with the second characteristic. The third characteristic of good reading is ability to understand well. Although understanding is a broad phenomenon going differently with a poem than in case of logical concepts, yet general understanding means the developed capacity to identify what the author's mind is trying to convey; and then to relate that understanding with one's own situation, knowledge and experience.

Reading as inquiry

If university student wants that his reading should result into learning it is necessary that reading be conducted as an inquiry. In conducting the reading as inquiry a person should gather and process information. He should raise questions and develop hypotheses while going through the pages one reads.

*Librarian, University of Delhi.

Also, one should test and evaluate the validity of findings obtained through readings. College must teach a person to programme one's reading, select materials himself, raise questions, draw inferences and reach conclusions. If these abilities are not developed during college education it will be much utilitarian to close down such colleges. College teachers need to see that for cultivating standard reading abilities, the conceptual growth is engineered by students themselves, and not by teachers. For making enquiry type of reading and learning the dominant mode of college education, it is essential that college library and college librarian become the heart of college education activity. If the library appears in operation the college teaching shall become a motivational force for promoting curiosity and for building up irresistible learning pressures. The students then will find ways to assimilate and accommodate discrepant events because each student will learn to adapt the reading learning process to his own cognitive needs. The basic requirement for the success of this method of reading and learning shall be the availability of able, educated and dynamic librarian(s) in college libraries occupying necessary status and roles in college education. In developed countries, libraries and librarians are already sharing teaching roles even in secondary and primary education. For developing countries it is essential to bring libraries and librarians in teaching roles, at least at the college level, otherwise the college education is a failure. Inability to conceive the proper roles of libraries and librarians at various levels of education appears to be the single largest reason for the failure of education in developing countries. Educational administrators are guided by the quality of their existing librarians and libraries, (ignoring the quality of both required for tomorrow) and thereby the need for and the purpose of self education, largely through the efforts of the self, does not get developed in our colleges.

Processes and skills in reading

Reading is responding. It is a stimulus to images, memories, identification of fresh and creative thought. Reading contributes to the development of values in life. It gives reassurance and makes people achieve. It generates curiosity and zest for living, and develops compassion and courage in a person's personality. Reading, like thinking or problem solving, always occurs in some context. The cognitive processes involved in reading are those of assimilation and accommodation. Critical reading has twelve elements involved in it. The following twelve processes go with the act of reading :

1. Grasping the meaning of a statement.
2. Judging if there is ambiguity in the reasoning.
3. Judging if certain statements contradict each other.
4. Judging if a statement is specific one.
5. Judging if the statement is actually the application of a principle.
6. Judging if an observation is reliable.

7. Judging if a conclusion follows necessarily.
8. Judging if inductive conclusion is required.
9. Judging if problem has been identified.
10. Judging if something is an assumption.
11. Judging if a definition is adequate.
12. Judging if a statement is acceptable.

The above mentioned processes pass through the three dimensional model of critical thinking: a logical dimension, a criterial dimension, and a pragmatic dimension. But real reading competence is much more than some techniques and processes. It is a creative action of adapting situational adjustments to emergent ones. It is a continuing quest wherein successive steps are deduced from what went before and are projected to new situations as alternatives. In brief, critical reading is the evaluation and reconstruction of the message of the author. This happens when a student evaluates the plot of the story, the style of the author and various philosophical and other aspects of the author's message in his work. For developing skills in reading, the college students should be trained in the following :

1. Accurate interpretation of facts.
2. Grasping of the general idea.
3. Identification of sequence in ideas read.
4. Recognition of the central theme, coordinate and subordinate points of the main idea.
5. Reaching a tentative conclusion.
6. Evaluation of ideas for relevancy.
7. Recognition of the mood, tone and intention of the author.
8. Interpretation of graphic materials in the text.
9. Solving problems through what has been read.
10. Identification of cause and effect relationships
11. Classification of the ideas in a brief chart to visualise what is read.

Wrong type of reading

Most of the students are forced to read wrong books at the wrong time in a wrong way. This happens when a teacher lectures them about what is in a book and reduces the contents to a series of points that can be remembered. These remembered points are reproduced at the time of discussions, seminars and also in the examinations. By adopting the above method the books are emptied and students are addicted throughout their life to reduce ideas and things to summary. This method also reduces reading only to read for the distant examination and when there is no examination no reading takes place. College students thereby fail to learn to read critically because they are taught to turn books to abstractions for examinations alone. In such a case most do not read the books and everyone reads the reviews and

market notes; and all talk as if they knew the books. While, there is only one way to read a book i.e. to give one upto it, alone, coming to know in personal terms what is in the mind of the author. This kind of reading will really overhaul our college education.

The most effective way to make youth interested in good literature is to "leave books around." Today our students are required to read too little of too many subjects. In doing so, students fail to enjoy scattered reading. Also, they fail to develop personal involvement with great authors. The prodigious reads for purposes of examination and is controlled and guided by deadlines. There is no coming out of a student with his own ideas, convictions and experiences from an author (s). The college teachers need to evaluate the quality and quantity of reading by their students. Unless studies in this field are conducted by college teachers and necessary steps taken to improve reading, the standards of higher education will continue to deteriorate in our society.

Behind the failure of cultivating sound reading by students, lies the lecture system. The lecture system assumes that learning is only conscious and that student mind is like a clean slate on which sense impressions and ideas should be recorded. The lecture system also presumes that mind is separated from body; emotions are divorced from intellect and conscious is disassociated from the unconscious. The ritual of making students sit in group to listen to talks contradicts all we know about communication theory. Even a casual look on lecture system convinces us all, including the practising teachers, that it is shallow and fallacious. We all dishonour lecture system. Yet, it goes on and on merely because of inertia on part of teachers for it is the least troublesome way of teaching. The university products take the lecture system even to schools. □

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Single copy	00.80 ps.	4.00	8.00

The Journal is mailed on 1st & 15th of every month.

Science Congress inaugurated at Osmania Varsity

Prime Minister, Shri Morarji Desai, while inaugurating the sixty-sixth session of Indian Science Congress at Osmania University, Hyderabad, called for a new direction to the development of science and technology so as to benefit rural masses and lower strata of society. He asked the scientists to give a new thrust to rural development and have a meaningful appreciation of the needs of villagers. Science and technology should be within the reach of common man. He said development of science and technology in this country had benefited only the urban classes and those in the lower strata had remained without its benefits. The Prime Minister said research on rural development offered the scientists a great challenge and

priorities for application of science should also change according to the national objectives. The National Committee of Science and Technology had formulated plans to modify the scientific policy resolution adopted by Parliament in 1958. Shri Desai said although a strong foundation in basic sciences was essential to widen its frontiers, careful selection of projects had to be made within the limited financial resources to achieve the objective of national development. The idealism of India's brilliant scientists seems to have been forgotten by the present scientists. Science could not be conducted in isolation from society as large sums of tax payers' money were spent and larger number of people were involved. Although returns from

grass-roots level. Professor Mehrotra emphasised the crucial role of science and technology in raising the standards of living and quality of life of the masses.

Professor Mehrotra said the university system tended to glorify intellectual work while denigrating manual work leading to a divorce between work and education. He said along with development of highest technologies, Indian scientists had to nurture the rural environment with low-cost technology to eliminate the socio-economic disparities. The weaknesses of education system included continued dominance by models and value systems adopted during the colonial regime. The teaching institutions are not able to discharge their primary function of imparting suitable training to students without their teachings having been exposed to research methodology. The best results could be achieved when teaching and research were carried together within the same Institution.

Professor Mehrotra said India remained educationally and scientifically backward till the emergence of Independence in 1947. Owing to insufficient precautions and uncontrolled exploitation of science and technology, serious problems of air and water pollution, accumulation of waste materials had been created by the evil consequences of fast growing technology. There appeared to be a drift from science in some of the developing countries. Although it was advisable to draw suitable lessons from the experience of other countries, it would be unfortunate if developing countries like ours slackened their efforts towards development of science. Notwithstanding our great scientific and technological strength, there had been little conscientious attempt in tackling problems of rural poverty and backwardness. Prof. Mehrotra said it was a happy development that science and managerial problems of labour intensive technologies were receiving priority in India.

About 3,250 scientists including 250 from abroad participated in the Science Congress.

CAMPUS NEWS

ample opportunities. Improving the bullock cart, drawing water from wells and providing sanitation were some of the urgent problems of villagers that needed priority solutions. Shri Desai reminded the scientists to use their scientific achievements for the benefit of society to avoid any threat from its adverse effects to human civilisation. There had been a substantial increase in the numerical strength of scientific personnel in India during the recent years and their present number was two million constituting the third largest in the world. These personnel were a great resource for social and economic development of the country. The Prime Minister said the real capability of potential of science and technology were yet to be fully harnessed for national use. The national priorities were undergoing a new change under the impact of popular opinion. The

science could not be quantified, there was scope where the achievements could be measured in terms of accountability. The Prime Minister said science should be a part of education which would help its use for good purposes.

Professor R.C. Mehrotra, Vice-Chancellor of University of Delhi, and General President of the Congress called upon the scientists and technologists to prepare themselves to meet the needs of one thousand million Indians in the year 2000 A.D. He said Indian scientists faced an unprecedented challenge in making their efforts relevant to the needs of society and asked them to work with the spirit of dedication and patriotism. The fruits of research should reach the common man. He suggested that scientists with motivation and commitment could be encouraged to spend long periods in villages to get direct feedback at the

Plea to improve maths teaching

While inaugurating the 44th conference of Indian Mathematical Society at Osmania University, Shri K. C. Abraham, Andhra Pradesh Governor said that although the country had produced outstanding mathematicians, the response to learning of the subject continued to be poor. He said proper teaching of mathematics would lead to improvement of basic knowledge of students. Most of the students stopped learning mathematics after the secondary stage with the result that their basic knowledge was affected. The Governor said that we would not be able to achieve the objective unless the academic background of the youth was prepared thoroughly.

Prof. U. N. Singh of Delhi University said in his presidential address that present examination oriented system of mathematics education did not allow scope for proper development of the talents of students and discouraged natural growth of their creative facilities.

Osmania Varsity organises history congress

Dr. M. Channa Reddy, Andhra Pradesh Chief Minister in his inaugural address at the 39th session of Indian History Congress held recently at Osmania University said that history textbooks should give proper representation to all regions of the country and suggested a historical study of state and central government's role in this direction. Indian history was devoid of economic and political imperialism and was full of human values. He said history was an asset to any country, especially ours which had a glorious past. He called upon the historians to contribute their writings in a manner which will generate confidence in the future generation. History should not indulge in hero worship but should reflect the social conditions and adopt a dynamic attitude towards past and future.

Prof. S. Gopal of the Centre for Historical Studies, Jawaharlal

Nehru University, in his presidential address pleaded for freedom of historians from the influence of politics and administrators. He pleaded for attitude of laissez-faire in the field of history and suggested the encouragement of historical writings purely on academic basis. He said commitment to particular values and conscious subjectivity was an asset in the approach to social sciences. Dr. Gopal said that history had become world history today with primacy of Europe destroyed and Asia and Africa playing their rightful role. Contemporary history could be focused in proper perspective if greater attention was paid to pre-colonial history of the countries of Asia and Africa before going in for comparative studies. He expressed the hope that number of chairs in the study of contemporary history would increase in due course of time. He said study of contemporary history was a healthy development as it meant a fresh approach to history.

Earlier Prof. G. Ram Reddy, Vice-Chancellor of Osmania University in his welcome address said that academic history influenced contemporary history and called for remarkable objectivity.

Shri V. Venkata Narayana, State Minister for Endowments inaugurated the archives and archaeology exhibition organised at the University College of Arts. The book exhibition organised by the publishers was also opened in the same premises.

National Book Fair at Bangalore

Shri Govind Narain, Karnataka Governor who was the chief guest at the inaugural function of the ninth National Book Fair opened recently in Bangalore lauded the key role played by National Book Trust in boosting publication and export of books and fostering book-mindedness among people. He urged the Trust to publish more titles on country's culture to educate the youth and promote national integration. He suggested that the Trust should take effective steps to ensure that people in different

parts of country had an easier and wider accessibility to its excellent publications. The Governor advised the students to do supplementary reading even after completing their formal education to keep them abreast of the latest developments in their fields.

State Chief Minister, Shri Devaraj Urs called for a concerted drive to revive wholesome reading and asked the Trust to conduct such exhibitions at district levels in regional languages. He felt that literacy consciousness in India was lacking and library legislation fell short of our present expectations. He said only a few universities, colleges and other educational institutions were equipped with proper libraries in our country.

Union Education Secretary Shri P. Sabanayagam who presided over the function in the absence of Union Education Minister said publishing industry had a vital role to play in encouraging authors. He urged the publishers to consider how best they could bring down the prices of books. He further said that former British colonies would offer greatest export potential for Indian books.

About one lakh books in English and Indian languages were displayed during the Fair by about two hundred publishers and booksellers. An exhibition of books for the neo-literates was organised separately at the Fair for the first time. A three-day national seminar on 'publishing for children in the coming decade' was organised as part of the Fair.

Need to avoid waste stressed

Dr. P. Sivalingam, Vice-Chancellor of Perarignar Anna University of Technology, Madras while inaugurating the eleventh annual convention of Operational Research Society of India held recently in Bangalore said that great deal of inefficiency and ineffectiveness visible in Indian economy was due to waste. He said waste of resources, especially in the context of scarcity was unpardonable. He pleaded for wide use of operational research for

economic growth and industrial development. Prof. Sivalingam said application of these ideas for solving real life problems might help people to improve their condition. Dr. Sivalingam expressed the need to exploit non-depletable energy sources like solar radiation, wind power, biomass conversion and water management. There was need for pooling the network of streams into an integrated system. Sewage and industrial waste disposal project should also be coordinated along with water projects as waste water after re-cycling was charged into streams.

Prof. Sivalingam said country was losing twenty five per cent of the generated electrical energy in transmission. A solution to this problem could be found by a consortium of specialists. How to store the surplus and use it at times of shortage was a typical operational research problem. Operation research could also be applied profitably in the field of rural development, rationalisation of taxes and irrigation facilities.

Professor N. S. Ramaswamy, Director, Indian Institute of Management, who presided over the convention said that there was tremendous amount of wastage which could be avoided with the improvement of managerial techniques.

Shri S.N. Sundera Raju, President of the Society emphasised the need to bring about better rapport between professionals and users of latest techniques in various fields.

Place of English in study of science

Prof. V.V. John, former Vice-Chancellor of Jodhpur University while addressing the all-India English Teachers Conference held recently at Jaipur under the auspices of Department of English of Rajasthan University has said that English studies in India had a chance to develop in a meaningful way as an academic discipline and should be pursued to make a substantial contribution to the birth of learning in India.

Dr. P. C. Sood of Delhi University said in his presidential address that English was a working

language and India could not afford to neglect its study to take her place as a modern state. Although English may appear to be the only link between north and the south, it could not serve the purpose of a national language. At the same time we should not forget that study of the language had made available to us vast and rich treasure of literature which we should not lose. He suggested that emphasis should be laid on the language study in preference to proficiency in literature. English was the best tool for acquiring proficiency in science technology, medicine and law. Prof. Sood said that wherever English was taught as a secondary language the main stress was on language proficiency—the ability to read, write and speak with a degree of competence.

Bhagalpur plans school for environmental sciences

The University Grants Commission has given its approval for starting a School of Environmental Sciences to Bhagalpur University. The university will submit a detailed report to the Commission to undertake teaching and research programmes in the environmental sciences during the sixth plan period. The university has already taken steps in this direction and its postgraduate departments in Botany, Zoology, Physics, Chemistry, Geography and Statistics have prepared detailed action programme. The project includes intensive study on problems of water pollution which is already under joint investigation of the university departments of Botany and Zoology under a UNESCO sponsored scheme.

The university has also prepared a campus development plan costing about Rs 50 lakhs for consideration of state government. The Centre for Regional Studies comprising departments of Political Science, Economics, Sociology, Commerce, Botany, Zoology and Chemistry had started functioning. The Centre would undertake a detailed study on socio-economic and ethno-biological aspects of Santhal Parganas.

Andhras Panel on students employment schemes

The Andhra State Government has constituted a Committee headed by Prof. M. R. Apparow, Vice-Chancellor of Andhra University to make an indepth study of involvement of students in self-employment schemes. The Committee will also recommend steps to involve students of the colleges in the State to participate actively in the National Service and other such schemes. The Committee has been set up in pursuance of the decision taken at the State Vice-Chancellors conference held in July last year.

The Committee includes among others, Education Joint Secretary, Mrs. Rebello, Mr. V. Ramachandran, Director of Higher Education, Mr K. Obaiah, Director of Industries, Dr. Babu Rao, NSS Co-ordinator, Osmania University, Mr B.N. Yugandhar, Special Officer, Employment Schemes, Dr. D. S. Pinge, Head, NSS Unit, Tata Institute of Social Sciences, Bombay and Prof. K.V. Ramanna, Head, Department of Social Work, Andhra University.

Andhra organises training course in geophysical technology

Dr. S. Z. Qasim, Director, National Institute of Oceanography while inaugurating recently the training course on marine geophysical technology at Andhra University called upon the universities to devise means for transfer of technology to the users instead of concentrating on academic excellence. Dr Qasim said his Institute had already started transferring the indigenous development technology to Oil and Natural Gas Commission for exploration of nation's resources. He asked the scientific community to promote indigenous technology in the field of instrumentation and exploration instead of depending on foreign technology. Dr. Qasim said the next two decades would be the age of sea and recent discovery of oil, natural gas and minerals in the sea beds had given an impetus to the sciences of oceanography.

Dr. V. K. S. Vardhan, former

Director-General of the Geological Survey of India who is also the Chairman of the Organising Committee of the course pleaded for transfer of technology at various levels in different forms—individuals, institutional, national and international. He said the course was of far-reaching significance as teachers and trainees were being involved in an important educational experiment. The ocean now constituted a frontier where the most exciting developments in science, technology and resources were taking place. It had been estimated that about forty percent of the world's oil resources might be found in off shore deposits. The course has its own importance in the context of developing our national capabilities in this area where global demands were rapidly increasing.

The course was conducted by the Geo-Physics Department of Andhra University with the co-operation of University Grants Commission. The participants to the course included representatives of Oil and Natural Gas Commission, Geological Survey of India, National Institute of Oceanography, Universities of Osmania, Cochin, Roorkee, Banaras and Indian Institutes of Technology.

Study of desert wild life

The first wild life preserve of the country will be located at Jaisalmer desert in Rajasthan. The project has been prepared to conserve the vanishing species of avifauna which sustain themselves on the fragile ecosystem of the Thar desert. The dead stillness of Indian desert is illusive. The dry and sun-scorched land teems with tiny to medium plant and animal life. The region is the winter colony of migratory common sand grouse, lesser bustard and a host of tiny sparrows, uncommon in other parts of the country. It is the homeland of many disappearing species. Despite harsh conditions, delicate and colourful flora bloom in autumn, winter and spring.

The fossil sites will be developed as part of the national desert park to conserve the animal and plant life of this area. A research

centre for comprehensive study of human, animal and plant life has been included in the project. The project will cover the recently discovered valuable plant life in the vicinity of Jaisalmer fort.

National youth programme

Dr. P. C. Chunder, Union Education Minister while inaugurating the meeting of reconstituted National Youth Board held recently in New Delhi underlined the need for new movements to harness the energy of youth into constructive channels. He referred to the need to utilise youth energy in rural sector and said that those from the backward classes had their own problems which needed urgent attention. The Union Minister said the rural youth felt frustrated because of unemployment which was linked with socio-economic development in the country.

Prof. Sher Singh, Minister of State for Defence Production said although there were some programmes for the study of problems of student youth, due attention had not been paid to the difficulties of non-student youth.

Dr. J. D. Sethi of the Planning Commission suggested to divide the youth for consideration of their problems into urban and rural categories.

Punjabi Varsity introduces examination reforms

Punjabi University has decided to introduce reforms in its examination system. The reforms relate to the setting and moderation of question papers, moderation of examinations results and re-evaluation of answer books. The question papers for the first degree examinations will now be set up by the external examiners in association with the internal teacher acquainted with the courses of studies. The question papers in case of postgraduate examinations will be set up by the external examiners and sent to the internal examiner for moderation. The changes in the paper would be introduced with the consent of the external examiner and dispute, if any, will be referred to the Vice-Chancellor, for decision. A team

of paper setters will be allotted upto three papers for one or more examinations. The team will be required to prepare a set of upto four question papers and the university will utilise any question paper for the annual or supplementary examination. The university will have always a spare set of question paper to meet any eventuality.

The Board of Studies will prepare exhaustive syllabuses with adequate guidelines for the use of teachers, paper setters and students. These question papers will be prepared and circulated as part of the syllabus. The Board of Studies will take assistance from the Question Banks formulated by the Association of Indian Universities.

There will be separate committees for moderation of examination results at postgraduate/undergraduate levels. These committees will have powers to suggest changes in pass percentage of an examination as a whole or in respect of a subject. Revaluation will be allowed in those examinations where the answer books had been examined by the single examiner. The candidates whose answer papers had been evaluated by two examiners before declaration of the result, will not be entitled to seek re-evaluation of their papers. Other candidates will however have the discretion to apply for re-evaluation of their answer papers in not more than two subjects at the undergraduate level and two papers at the post-graduate level.

The answer books of the top ten candidates in case of post-graduate examination and the top fifty in case of undergraduate classes will be sent to the second examiner appointed by the Vice-Chancellor out of the panel of examiners for second evaluation. The results of these candidates will be determined on the basis of an average of marks given by the two examiners.

The new system will not be applicable in the case of examinations in the faculties of engineering, medicine, ayurveda and other postgraduate departments which are following the semester system.

Plea for economic policy with social justice

Prime Minister, Shri Morarji Desai while inaugurating the diamond jubilee session of Indian Economic Association at Indian Institute of Technology, Bombay, called for evolution of a low-cost economy so that there was all-round satisfaction and unity in the country. He said that practically all over the world high cost economy had been adopted and India too was going towards this direction. There will not be a satisfactory solution of the economic problems concerning the nation until low cost economy was adopted. Shri Desai said low-cost economy depended on increased production and on increasing the productive capacity of all persons with satisfactory remuneration. He said the country would have to plan for an ordinary person and find solutions to poor man's problems. The Prime Minister said that attending to rural masses did not mean that government had given up heavy industry. The Prime Minister explained the concept of trusteeship as enunciated by Mahatma Gandhi and said the government was having a dialogue with educational experts so that a revised educational pattern could emerge.

Professor Gautam Mathur in his presidential address pleaded for economic policy which would promote growth and social justice. He said social justice should be given to the present generation with justice for the future generation through a high ploughback ratio of higher order investment. He said too much reliance on borrowing from public was highly inflationary because in the absence of disparity tax system, huge interest payments received by individuals were liable to be spent in a way upsetting the balance of allocation. Government expenditure from profits on public enterprises was also a cause of increase in prices. The services of the public sector in the field of luxury goods also engendered inflation. Prof. Mathur said traditional mode of raising resources in a non-inflationary manner were highly inflationary.

The session was attended by about eight hundred delegates including a few eminent economists from abroad.

Re-orientation of medical education proposed

Shri J.P. Yadav, Union Minister of State for Health Services while inaugurating the eleventh annual conference of Indian Pharmacological Society in New Delhi said reorientation of medical education was being planned to provide health services to those people who had been deprived of these facilities in the past. He said the Health Ministry was thinking over the entire gamut of medical education which did not conform to the national needs. Shri Yadav asked the pharmacologists to suggest ways to provide cheap, effective and pure drugs to rural masses.

Role of management education stressed

While inaugurating the seminar on management education held recently in Bangalore under the auspices of Indian Institute of Management, Shri K.R.S. Gowda, Director of the Hindustan Machine Tools said that universities and institutions teaching management courses should evolve a common curricula of the various courses. He said management of people had become an important component of management education and philosophy and principles relevant to Indian environments had not been developed.

Prof. N.S. Ramaswamy, Director of the Institute said that there will be tremendous improvement in the next few years in management education system in the country, especially at the university level. He suggested that a conference could be organised to involve the vice-chancellors, faculty members and all those concerned with the management departments to chalk out a concrete programme for further improvement in the system.

Shri C.S.S. Rao, Chairman of the Indian Telephone Industry said at the concluding session that the concept of a techno-manager brought together two basic discip-

lines, technology and management.

Science education in universities

Dr. Atma Ram, Chairman of the National Commission of Science and Technology, while initiating a panel discussion on the focal theme of sixty-sixth Indian Science Congress held in Hyderabad called for a practical approach towards science education in universities. He said these institutions were isolated from real problems facing the nation. The university education had been ignored in the enthusiasm for creating more scientific research institutions in the country. Scientific equipment was lying in a deplorable condition in some of the universities. Dr. Atma Ram said that development of knowledge through basic research was not enough; it had to be applied for solving the problems of mankind. Most of the existing problems of rural development could be solved by what was already known to the scientists.

World Sanskrit conference

The world sanskrit conference will be held in Allahabad in the last week of January on the occasion of centenary celebrations of Shri Aurobindo Ashram. The Organising Secretary of the National Committee for centenary celebrations said in Pondicherry that about fifty thousand delegates including five thousand from abroad were expected to attend the conference which will be inaugurated by the Union Education Minister, Dr. P.C. Chunder.

English to continue as associate language

Prime Minister, Shri Morarji Desai, while delivering the valedictory address at the tenth anniversary celebrations of Kerala State Institute of Languages in Trivandrum said that there was no question of discarding English which will continue as an associate language. It was however important to realise that people developed when they had a common language which will promote a sense of national integration. Shri Desai cited the case of the

United States and said that though that country was inhabited by many different people, it had adopted one language.

National sports plan

The All-India Council of Sports will shortly submit to the Union Government its draft plan on national sports policy. Raja Bhalindra Singh, Vice-President of the Council said in Chandigarh recently that the draft plan was being framed by the sub-committee and was in its final stage of formulation. He hoped that the plan would provide right direction to the development of sports in the country. He said that there should be a government agency to identify the sports potential in the states. He suggested registration of players in every discipline in each state so as to enable the Council and national federations to have a comprehensive idea. He emphasised the need for a regular check up of the performances of players.

Colleges to provide medical care to villages

The Union Health Ministry has drawn up a scheme for re-orientation of medical education to bridge the imbalance between urban and rural areas in the field of health services. The medical colleges will now be required to look after the area covered by the primary health centres. The colleges will have their own mobile clinics to enable the staff and students to supplement the rural health care services. The scheme is expected to create a sense of social accountability and obligation among medical students.

Shri Rajeshwar Prasad, Union Health Secretary said in New Delhi that the prevailing system was based largely on the Bhore Committee Report of 1946. The health services at present have been clustered in the hospitals resulting in about twenty per cent of the urban people getting eighty per cent facilities. The rural people are left with bare twenty per cent of the medical facilities. Shri Rajeshwar Prasad said rural health scheme has been launched to cover six lakh villages which

will select their representatives to be trained by the government for service to the community.

Planned growth of colleges stressed

Shri B.P.R. Vittal, State Finance Secretary in Andhra Pradesh while inaugurating the seminar on 'Collegiate Education' organised by the Telengana College Teachers Association in Hyderabad, said that the existing colleges should be consolidated before any new college was allowed to function. He said unplanned growth of colleges would result in frittering away the available resources and it would become difficult to meet the increasing expenditure on education. He emphasised the need for long term planning in the field of higher education.

Shri M.V. Rajagopal, former Vice-Chancellor of Jawaharlal Nehru Technological University, said that system of affiliated colleges was peculiar to India and stressed the need for improving the facilities in these colleges.

Shri B. Pratap Reddy, State Education Secretary in his valedictory address said that expenditure on education was a sound investment. He stressed the need for a detailed survey before a new college was opened.

The seminar recommended establishment of a postgraduate college in each district of Telengana region. The recommendations included restructuring of job-oriented education at undergraduate stage, democratisation of governing bodies of the colleges and direct payment of salary to teachers.

Cultural troupe from NEHU

A group of 50 students from North-Eastern Hill University, Shillong, is on an all-India tour led by the Director of Sports of the University, Shri G.M. War. In the course of their travels they will be participating in a Youth Festival at Bombay and present cultural items at Agra, Delhi and Patiala. The group comprises Khasi, Naga and Mizo students who will be presenting their indigenous tribal dances and folk music of their regions. This is the

first time that a composite group of the tribal students of the North-Eastern region is undertaking a cultural tour of the country.

PG classes in Mizoram and Nagaland

The North-Eastern Hill University, Shillong, would be starting post-graduate teaching in Education, English and Economics at both Aijal and Kohima, the capitals of Mizoram and Nagaland.

Agriculture college in Nagaland

A College of Agriculture was inaugurated at Ghaspani in Kohima by the Hon'ble S. S. Barnala, Union Minister for Food and Agriculture. This constituent college of the North-Eastern Hill University has been established with the cooperation of the UGC and the ICAR and will impart instruction in hill agriculture. Other professional colleges are also likely to be established in Meghalaya, Nagaland and Mizoram.

Research centre for sports goods

The Union Government will set up a centre at Meerut to conduct research and development in the field of sports goods. The proposed product-cum-process development centre will fill the void experienced in the country for a long time. There is at present no research and development activity relating to sports goods and standardisation of the process of their manufacture. The proposed centre will search for alternative sources of raw materials, evolve simple and suitable machinery required for use in the industry, standardise production methods, quality control, testing and training activity connected with the industry.

ACU programme on academic exchange and times higher education fellowships

The Association of Commonwealth Universities in London has invited proposals from member-universities in the developing countries for promotion of acade-

mic movement between universities in the less developed countries of the Commonwealth. The object of the scheme is to provide for academic exchange specifically between developing countries of the Commonwealth for any of the following purposes :

- attachments of university staff, both academic and administrative, to other universities in Commonwealth developing countries to obtain greater experience and training;
- short study tours of university staff;
- exchange of staff between universities in developing countries;

—university-sponsored seminars with a national or regional developmental orientation.

The scheme is administered flexibly and the Association of Commonwealth Universities will be willing to consider any project of developmental nature which a member-university can propose.

The ACU also offers the Times Higher Education Supplement award to an applicant from one of the member-universities in a developing country to enable him to visit another developing country to study or to obtain greater experience that would benefit his own university or country. There

are no prescribed rules but proposals for attachments of university staff, short study tours and exchange of staff between universities in developing countries will be considered favourably. The competition is not necessarily limited to candidates already holding established positions on staff of a university or secretariat of inter-university body.

These programmes are intended for candidates from one developing country for study or experience in another developing country of the Commonwealth. The ACU will entertain applications for both these programmes by 19th February, 1979.

NSS Needs Proper Orientation

(Contd. from page 35)

alleviation. The student should next secure some skills to render necessary service. Rendering effective service requires some power—economic, social or political. According to the author the N.S.S. scheme should aim at motivating a student to serve and equipping the student with some skill to serve. A student from an English Missionary school/college may not be willing or motivated to serve the rural, the illiterate or the poor but, being intelligent, may easily pick up skills and remain completely alienated from the latter when yielding sufficient powers in future life.

To motivate students to take up social work emphasis should be laid on lectures, meetings, study of work done by voluntary and official agencies, camps organised to know the community and its problems (as distinct from camps organised to solve such problems ineffectively). N.S.S. oriented teachers should have access to published communications of work done by voluntary organisations in different directions. Motivation to serve others must take roots right during school days, since it may be difficult to change attitudes of college students.

To acquire skills to serve, students must start with lessons in discipline, dignity of work and in physical culture. In addition they should learn some art or craft which takes due care of the courses of studies they follow. It is usually found that skills acquired by N.S.S. volunteers in a particular college are in one particular area irrespective of the types of course or subjects they follow. It would be useful to train students of Bio-Science in inoculation/vaccination programmes while students of history might help in the preservation of neglected relics and monuments. Students of general science may transfer the idea of compost manufacture from water-hyacinth to farmers etc. It must be noted that even the ability to communicate objectively the condition of a moribund patient to a physician and to contact the local health care facility also requires a skill, which is no less

important than the skill required in rendering first aid to a sick or an injured person.

Coming to involvement in actual service programmes, one should note that transfer of skills to others is a service of lasting benefit to those served. If N.S.S. volunteers could learn such crafts as fruit preservation and canning, mat weaving, repair of simple electrical or mechanical gadgets, construction of simple models required in school science classes etc and transfer this knowledge to the local people, it would be a great service rendered to the society. Students cannot be provided with sufficient power to serve in terms of financial and other material inputs and hence they could better be required to man social welfare programmes of various official and non-official organisations in the field. There should be no undue apprehension that such involvements of students will mean a loss of identity for the N.S.S.

The N.S.S. programme must decide on the relative emphasis to be given to these three aspects of the problem. It would be a good idea to devote around 40 per cent of the total time (and effort) to the area "will to serve", the same time to the second aspect namely "skill to serve" and only 20 per cent of the time may involve actual service programmes. A balance in efforts must be ensured.

The image of the N.S.S. scheme must be refurbished, lest economic power is misused by some teachers to enjoy student support and the N.S.S. programme is looked down upon by students and teachers who are not involved in the movement.

Involvement of all students and of all faculty-members, at least indirectly, in N.S.S. programmes must be ensured. N.S.S. volunteers must not be disparaged as less intelligent and less committed ones. It would be desirable if each student be required to join either the N.C.C. or the N.S.S. or the N.S.F. programme and to join one such programme only. This would help self-development of students, increase their entrepreneurial and organisational abilities and make them better citizens. □

Conferences, Seminars & Workshops

January-March, 1979

Date	Title	Venue	Sponsoring Body
Nov 78-Feb 79	Ist Regional training course on methods and techniques in exploration geophysics	Hyderabad	NGRI & UNESCO
1 Jan- 5 Jan	VII congress of the International Society of Primatology	Bangalore	Indian Institute of Science
1 Jan-13 Jan	Instrumentation & Mining Industry	Dhanbad	Indian School of Mines
3 Jan-6 Jan	International Conference on advances in chemical metallurgy	Bombay	Bhabha Atomic Research Centre
3 Jan-6 Jan	XVI National Conference of the Indian Academy of Paediatrics	Calcutta	I.A.P.
3 Jan-7 Jan	66th Indian Science Congress	Hyderabad	I.S.C. Association
4 Jan-6 Jan	Diagnosing human behaviour in administration	New Delhi	Indian Institute of Public Administration
5 Jan-10 Jan	Operations research and computers for EDP Managers	Bangalore	Indian Institute of Management
6 Jan-10 Jan	Workshop on Medical Educational Technology	New Delhi	AIIMS
8 Jan-11 Jan	All India Seminar on illumination engineering	Bombay	Institution of Engineers (India)
8 Jan-11 Jan	International Seminar on Resources Engineering	Bombay	Cement Research Institute
8 Jan-13 Jan	Project programming with network techniques	Madras	Indian Institute of Management
8 Jan-22 Jan	Special melting and refining techniques	Bangalore	Indian Institute of Science
9 Jan-12 Jan	International symposium on marine algae of the Indian Ocean region	Bhavnagar	CSMCRI
10 Jan-12 Jan	Nat. Conference of Cell biologists	Bombay	Cancer Research Institute
11 Jan-12 Jan	Workshop and exhibition on Professional grade electronic components	New Delhi	Institution of Electronics & Telecommunication Engineers
12 Jan-15 Jan	All India Symposium on invertebrate endocrinology	Nagpur	Nagpur University
14 Jan-20 Jan	International Yoga Coordination Congress	New Delhi	International Yoga Coordination Centre
14 Jan-24 Jan	Int. Conference on promotion of industrial design in developing countries	Ahmedabad	Nat. Inst. of Design
15 Jan-29 Jan	Printed Circuit board design technology	Bangalore	Indian Institute of Science
16 Jan-20 Jan	Transport systems and settlement structures	Bangalore	Indian Institute of Management
16 Jan-27 Jan	Introduction of computers	New Delhi	Indian Institute of Public Administration
17 Jan-19 Jan	Symposium on power plant safety and reliability	Bombay	Dept. of Atomic Energy & Bhabha Atomic Research Centre
18 Jan-20 Jan	38th Annual Conference of Indian Society of Agricultural Economics	Jorhat	ISAB & Assam Agricultural University
18 Jan-23 Jan	Annual Conference of the Textile Institute	New Delhi	T.I.
19 Jan-23 Jan	Int. Seminar on Cotton in a competitive world	Delhi	Textile Institute, Manchester, U.K.
22 Jan-25 Jan	Symposium on analytical instruments and instrumentation	Bombay	Dept. of Atomic Energy & Bhabha Atomic Research Centre
29 Jan-3 Feb	Ecology for mining areas	Dhanbad	Indian School of Mines
January 1979	Seminar on growth requirements of electronics industry	Chandigarh	I.E.T.E.
1 Feb-2 Feb	Symposium on solvent extraction of metals	Bombay	Dept. of Atomic Energy & Bhabha Atomic Research Centre
1 Feb-3 Feb	International Symposium on Coal Science and Technology for the '80's	Dhanbad	Central Fuel Research Institute
1 Feb-15 Feb	Systems analysis and simulation	Bangalore	Indian Institute of Science
5 Feb-11 Feb	Project Management	Bangalore	Indian Institute of Management
5 Feb-3 Mar	Inter-country workshop on laboratory method in food hygiene	Izzatnagar	W.H.O.
8 Feb-10 Feb	Quaternary environments with special reference to Western India	Baroda	Dept. of Geology, M.S. University of Baroda
12 Feb-17 Feb	Management of scientists and engineers	Hyderabad	Indian Institute of Management
12 Feb-19 Feb	5th Workshop on hospital infection with special reference to pseudomonas	New Delhi	AIIMS
12 Feb-26 Feb	Precast concrete structures	Bangalore	Indian Institute of Science
14 Feb-17 Feb	Nat. Seminar on environmental pollution & control	Ranchi	Nat. Inst. of Foundry & Forge Tech.
14 Feb-24 Feb	Management information systems	New Delhi	Indian Institute of Public Admin
19 Feb-21 Feb	Symposium on plasma physics & M.H.D.	Bombay	Dept. of Atomic Energy & Bhabha Atomic Research Centre
19 Feb-24 Feb	Repair & maintenance of electronic equipment	Bangalore	Indian Institute of Science

Date	Title	Venue	Sponsoring Body
22 Feb-24 Feb	Top management seminar on transport policy and coordination	Madras	Indian Institute of Management
26 Feb-10 Mar	Workshop on Fracture fatigue & failure analysis	Bangalore	Nat. Aeronautical Laboratory
2nd Week of Feb	All India Seminar on journalism	Mysore	University of Mysore
February 1979	National Seminar on depressive illness	Madurai	Madurai Medical College, Dept of Psychiatry
February 1979	National Seminar on improvised bullock cart transport in rural roads	Rourkela	Regional Engineering College
February 1979	Round table on transfer of technology	New Delhi	Institution of Engineers (India)
5 Mar-17 Mar	Training Methodology	New Delhi	Indian Institute of Public Administration
7 Mar-9 Mar	National conference on industrial tribology	Dehra Dun	Indian Institute of Petroleum
12 Mar-24 Mar	Mineral Engineering	Dhanbad	Indian School of Mines
14 Mar-24 Mar	Integrated approach to budgeting	New Delhi	Indian Institute of Public Administration
March 1979	Experimental techniques in fluid mechanics	Bangalore	Indian Institute of Science
March 1979	Indo-British exhibition seminar on the rehabilitation and vocational education of the handicapped		Ministry of Education & Social Welfare & British Council
March 1979	Seminar on Sobolev Spaces, and its application in fluid dynamics	Surat	S.V. Regional College of Engg & Tech
March/April 1979	Materials technology in constructive methods in civil engineering	Bangalore	Indian Institute of Science
1st Qtr. of 1979	Role of induced mutation in crop improvements	Hyderabad	Dept. of Atomic Energy & Osmania University

Subject Index

Date	Title	Venue	Sponsoring Body
Agriculture			
1st Quarter of 1979	Role of induced mutation in crop improvement	Hyderabad Osmania Univ	Dept of Atomic Energy
18-20 Jan	38th annual conference of Indian Society of Agricultural Economics	Jorhat	ISAE & Assam Agricultural University
Computers			
5-10 Jan	Operations research and computers for EDP Managers	Bangalore	Indian Inst of Management
16-27 Jan	Introduction to computers	New Delhi	Indian Inst of Public Admin.
Education			
March 19	Indo-British exhibition Seminar on the rehabilitation and vocational education of the handicapped		Ministry of Education & Social Welfare & British Council
Electricity and Electronics			
8-11 Jan	All India Seminar on illumination engineering	Bombay	Institution of Engineers (India)
11-12 Jan	Workshop and exhibition on Professional grade electronic Components	New Delhi	Institution of Electronics & Telecommunication Engineers.
19-24 Feb	Repair & maintenance of electronic equipment	Bangalore	Indian Institute of Science
Engineering			
March/April 1979	Materials technology in constructive methods in civil engineering	Bangalore	Indian Institute of Science
8-11 Jan	International Seminar on resources engineering	Bombay	Cement Research Institute
15-29 Jan	Printed circuit board design technology	Bangalore	Indian Institute of Science
17-19 Jan	Symposium on power plant safety and reliability	Bombay	Dept. of Atomic Energy & Bhabha Atomic Energy Res Centre
12-26 Feb	Precast concrete structures	Bangalore	Indian Institute of Science
26 Feb-10 March	Workshop on fracture fatigue and failure analysis	Bangalore	Nat. Aerouautical Laboratory
Food Technology			
5 Feb-3 March	Inter-country workshop on laboratory methods in food hygiene	Izzatnagar	W.H.O.
Geology & Surveying			
Nov 78-Feb 79	1st Regional training course on methods and techniques in exploration geophysics	Hyderabad	NGRI & UNESCO
8-10 Feb 79	Quaternary environments with special reference to Western India	Baroda	Dept. of Geology, M.S. University of Baroda
Instrumentation			
22-25 Jan	Symposium on analytical instruments and instrumentation	Bombay	Dept. of Atomic Energy & Bhabha Atomic Res Centre

Date	Title	Venue	Sponsoring Body
Journalism			
1st week of Feb 1979	All India Seminar on Journalism	Mysore	University of Mysore
Life Sciences			
1—5 Jan	VII Congress of the International Society of primatology	Bangalore	Indian Institute of Science
9—12 Jan	International Symposium on Marine algae of the Indian Ocean region	Bhavnagar	CSMCRI
10—12 Jan	National Conference of Cell Biologists	Bombay	Cancer Research Institute
12—15 Jan	All India Symposium on invertebrate endocrinology	Nagpur	Nagpur University
Management			
18—13 Jan	Project programming with network techniques	Madras	Indian Institute of Management
15—11 Feb	Project Management	Bangalore	Indian Institute of Management
12—17 Feb	Management of Scientists and Engineers	Hyderabad	Indian Institute of Management
15—24 Feb	Management information system	New Delhi	Indian Institute of Pub Admin.
15—17 March	Training Methodology	New Delhi	Indian Institute of Pub Admin.
14—24 March	Integrated approach to budgeting	New Delhi	Indian Institute of Pub Admin.
Medicine and Public Health			
—6 Jan	XVI National Conference of Indian Academy of Paediatrics	Calcutta	I.A.P.
—20 Jan	Workshop on Medical Educational Technology	New Delhi	AIIMS
Feb 1979	National Seminar on depressive illness	Madurai	Madurai Medical College Dept. of Psychiatry
2—19 Feb	5th Workshop on hospital infection with special reference to pseudomonas	New Delhi	All India Institute of Medical Sciences
Metallurgy			
—6 Jan	International Conference on Advances in Chemical metallurgy	Bombay	Bhabha Atomic Research Centre
—22 Jan	Special melting and refining techniques	Bangalore	Indian Institute of Science
—2 Feb	Symposium on solvent extraction of metals	Bombay	Dept. of Atomic Energy & Bhabha Atomic Res Centre
Mining and Minerals			
—13 Jan	Instrumentation mining industry	Dhanbad	Indian School of Mines
19 Jan—3 Feb	Ecology for mining areas	Dhanbad	Indian School of Mines
—3 Feb	International Symposium on Coal Sciences and technology for the '80's	Dhanbad	Central Fuel Research Institute
12—24 March	Mineral engineering	Dhanbad	Indian School of Mines
Physics & Chemistry			
March 1979	Experimental techniques in Fluid mechanics	Bangalore	Indian Institute of Science
March 1979	Seminar on Sobolev Spaces, and its application in fluid dynamics	Surat	SV Regional College of Engg & Tech
7—9 March	National Conference on industrial tribology	Dehra Dun	Indian Institute of Petroleum
19—21 Feb	Symposium on plasma physics & MHD	Bombay	Dept. of Atomic Energy & Bhabha Atomic Res Centre
Pollution Control			
14—17 Feb	National Seminar on environmental pollution and control	Ranchi	Nat. Intitute of Foundry and Forge Technology
Public Administration			
4—6 Jan	Diagnosing human behaviour in administration	New Delhi	Indian Institute of Pub Admin.
Science & Technology			
3—7 Jan	66th Indian Science Congress	Hyderabad	ISC Association
14—24 Jan	International Conference on promotion of industrial design in developing countries	Ahmedabad	Nat. Institute of Design
Feb 1979	Round table on transfer of technology	New Delhi	Institution of Engineers (India)
Textile Technology			
18—23 Jan	Annual Conference of the Textile Institute	New Delhi	T.I.
19—23 Jan	Int. Seminar on Cotton in a competitive world	Delhi	Textile Inst, Manchester, UK
Transport and Communication			
16—20 Jan	Transport system and settlement structures	Bangalore	Indian Inst of Management
Feb 1979	National Seminar on improvised bullock cart transport in rural roads	Rourkela	Regional Engineering College
22—24 Feb	Top management Seminar on transport policy and Coordination	Madras	Indian Institute of Management
Yoga			
14—20 Jan	International Yoga Coordination Congress	New Delhi	Int. Yoga Coordination Centre

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(i) Second class B.Sc. (Agri.). (ii) Second class M.Sc. (Agri.) in Agronomy. (iii) Ph.D. in Agronomy. (iv) Five years experience of Research/Teaching/Extension in Agronomy.

7. Associate Professor (Plant Breeding) (Rs. 1200-50-1300-60-1900)

(i) Second class B.Sc. (Agri.)/B.Sc. (ii) Second class M.Sc. in Plant Breeding/Genetics. (iii) Ph.D. in Plant Breeding/Genetics. (iv) Five years experience of Research/Teaching/Extension in the discipline of Plant Breeding/Genetics.

8. Extension Agronomist: (Rs. 1200-50-1300-60-1900)

(i) Second class B.Sc. (Agri.). (ii) Second class M.Sc. (Agri.) in Agronomy. (iii) Ph.D. in Agronomy. (iv) Five years experience of Research/Teaching/Extension in Agronomy.

9. Agricultural Economist: (Rs. 1200-50-1300-60-1900)

(i) Second class B.Sc. /B.Sc. (Agri.). (ii) Second class M.Sc. in Agril. Economics. (iii) Ph.D. in Agril. Economics. (iv) Five years experience of Research/Teaching/Extension in Agril. Economics preferably in Farm Management.

10. Agronomist: (Rs. 1200-50-1300-60-1900)

(i) Second class B.Sc. (Agri.). (ii) Second class M.Sc. in Agronomy. (iii) Ph.D. in Agronomy. (iv) Five years experience of research/teaching/extension in Agronomy/Weed Control.

11. Plant Physiologist: (Rs. 1200-50-1300-60-1900)

(i) Second class B.Sc. (Agri.). (ii) Second class M.Sc. in Plant Physiology. (iii) Ph.D. in Plant Physiology. (iv) Five years experience of research/teaching/extension preferably in Weed control.

12. Deputy Director (Economics) (Rs. 1200-50-1300-60-1900)

(i) Second class B.Sc. (Agri.)/B.Sc. B.A. (ii) Second class M.A. (Economics)/M.Sc. in Agril. Economics. (iii) Ph.D. in Agril. Economics. (iv) Five years experience of research/teaching/extension in Agril. Economics and ex-

perience in compilation, interpretation and evaluation of research data.

13. Deputy Director (Statistics)

(Rs. 1200-50-1300-60-1900)

(i) Second class B.Sc. (Agri.)/B.Sc./B.A. (ii) Second class M.A. (Maths)/M.Sc. in Statistics/Mathematics (iii) Ph.D. in Statistics. (iv) Five years experience of research/teaching in Statistics and experience in compilation, interpretation and evaluation of research data.

14. Deputy Director (Crops): (Rs. 1200-50-1300-60-1900)

(i) Second class B.Sc. (Agri.). (ii) Second class M.Sc. in Agronomy/Plant Breeding. (iii) Ph.D. in Agronomy/Plant Breeding. (iv) Five years experience of research/teaching/extension in Agronomy/Plant Breeding and experience in compilation, interpretation and evaluation of research data.

15. Rice Breeder: (Rs. 1200-50-1300-60-1900)

Essential

(i) Second class B.Sc. or B.Sc. (Agri.). (ii) Second class M.Sc. (Agr.) in Plant Breeding/Genetics. (iii) Ph.D. in Plant Breeding/Genetics. (iv) Five years experience of research/teaching/Extension in Plant Breeding/Genetics preferably on Rice-crops.

Desirable

Experience in Biometrical genetics with special reference to design of field experiments.

16. Vegetable Botanist: (Rs. 1200-50-1300-60-1900)

(i) Second class B.Sc. (Agri.). (ii) Second class M.Sc. Olericulture/Horticulture with specialization in Vegetable Crops. (iii) Ph.D. in Olericulture/Horticulture with specialization in Vegetable Crops. (iv) Five years experience of Teaching/Research/Extension in Vegetable Crops.

17. Associate Professor in Home Management (Leave Vacancy)

(Rs. 1200-50-1300-60-1900)

(i) Second class B.Sc. (Home Science)/B.Sc. (ii) Second class M.Sc. in Home Management. (iii) Ph.D. in Home Management. (iv) Five years experience in teaching/research/extension in Home Management or in any allied field.

18. Associate Professor in Clothing & Textiles

(Rs. 1200-50-1300-60-1900)

(i) Second class B.Sc. (Home Science)/B.Sc. (ii) Second class M.Sc. in Clothing & Textile. (iii) Ph.D. in Clothing & Textile. (iv) Five years experience in teaching/research/extension in Clothing & Textile or in any allied field.

19. Scientist

(Rs. 1200-50-1300-60-1900)

Essential

(i) Second class B.Sc. (Animal Science)/B.V.Sc. & A.H./B.Sc. (Dairying)/B.Sc. (Agri.). (ii) Second class M.Sc. in Animal Nutrition. (iii) Ph.D. in Animal Nutrition. (iv) Five years experience in Animal Nutrition research/teaching. Desirable Research experience in Forage Nutrition.

20. Associate Professor Agronomy (Agrostology): (Rs. 1200-50-1300-60-1900)

(i) Second class B.Sc. (Agr.). (ii) Second class M.Sc. (Agr.). (iii) Ph.D.

in Agronomy. (iv) Five years experience of Teaching/Research/Extension in Agronomy, preferably in Agrostology, as evidenced by published work.

21. Associate Professor of Livestock Economics: (Rs. 1200-50-1300-60-1900)

Essential

(i) B.V.Sc./B.Sc. (Ag.)/B.Sc. Ani. Sci./B.Sc. Dairy Husbandry. (ii) M.Sc. in Livestock Production/Dairy Husbandry/Poultry Husbandry/Sheep Husbandry/Dairy Economics/Ag. Economics. (iii) Ph.D. in Livestock Economics/Agri. Economics/Dairy Economics/Any branch of Animal Production with considerable experience in Livestock economics as evidenced by published research in Livestock economics. (iv) Atleast 5 years' experience of working in the area of Livestock economics/Ag. economics.

Desirable

(i) Experience of conducting and guiding research in the field of Livestock Economics/Dairy Economics. (ii) Rural Background.

22. Assistant Professor (Plant Breeding)
(Rs. 7000-40-1100-50-1300-Assessment-50-1600)

(i) Second class B.Sc. (Agri.)/B.Sc. (ii) Second class M.Sc. in Plant Breeding/Genetics. (iii) Ph.D. in Plant Breeding/Genetics or 3 years experience of Research/Teaching/Extension in Plant Breeding after Master's degree.

23. Assistant Agril. Economist

(Rs. 700-40-1100-50-1300-Assessment-50-1600)

(i) Second class B.Sc. (Agri.). (ii) Second class M.Sc. in Agril. Economics. (iii) Ph.D. in Agril. Economics or Second class M.Sc. in Agril. Economics with 3 years experience of Research/Teaching/Extension.

24. Assistant Agronomist: (Rs. 700-40-1100-50-1300-Assessment-50-1600)

(i) Second class B.Sc. (Agri.). (ii) Second class M.Sc. in Agronomy. (iii) Ph.D. in Agronomy or Second class M.Sc. in Agronomy with 3 years experience in Agronomy.

25. Assistant Residue Chemist

(Rs. 700-40-1100-50-1300-Assessment-50-1600)

(i) Second class B.Sc./B.Sc. (Agri.). (ii) Second class M.Sc. in Chemistry-Biochemistry. (iii) Ph.D. in Chemistry-Biochemistry or 3 years experience in residue analysis after Master's degree.

26. Assistant Nematologist (Wheat)

(Rs. 700-40-1100-50-1300-Assessment-50-1600)

(i) Second class B.Sc. or B.Sc. (Agri.). (ii) Second class M.Sc. with specialization in Plant Nematology. (iii) Three years experience of research on plant parasitic nematodes or Ph.D. in Plant Nematology.

27. Assistant Professor Animal Production Physiology: (Rs. 700-40-1100-50-1300-Assessment-50-1600)

(i) Second class B.V.Sc./B.Sc. (An. Sc.)/B.Sc. (Agr.) with A.H. specialization/B.Sc. (Dairying Husbandry). (ii) Second class Master's degree in Physiology or equivalent with three years experience in any branch of Production Physiology or Ph.D. with specialisation in any branch of production physiology.

28. Assistant Professor (Agril. Engineering Extension): (Rs. 700-40-1100-50-1300-Assessment-50-1600)

Second class Bachelor degree in Agril. Engineering with three years experience in extension/teaching/research in Agril. Engineering or 2nd class Master's degree in Agril. Engineering.

29. Assistant Animal Geneticist

(Rs. 700-40-1100-50-1300-Assessment-50-1600)

Essential

(i) Atleast Second class B.V.Sc. & A.H./B.Sc. (Animal Sciences)/B.Sc. (Agri.)/B.Sc. (Dairy Husbandry). (ii) Atleast Second class M.Sc. in Animal Breeding with three years' experience of research/teaching/extension in Animal Breeding OR Ph.D. in Animal Breeding.

30. Junior Scientist: (Rs. 700-40-1100-50-1300-Assessment-50-1600)

(i) Second class B.Sc. (Animal Sciences)/B.V.Sc. & A.H./B.Sc. (Dairying)/B.Sc. (Agri.). (ii) Second class M.Sc. in Animal Nutrition/Biochemistry. (iii) Three years experience in Animal Nutrition research/teaching OR Ph.D. in Animal Nutrition/Biochemistry.

31. Assistant Economic Botanist (NSP)
(Rs. 700-40-1100-50-1300-Assessment-50-1600)

(i) Second class B.Sc./B.Sc. Agri. (ii) Second class M.Sc. (Botany)/M.Sc. (Agri.) in Plant Breeding. (iii) Three years experience of Teaching/Research in Plant Breeding with special reference to Seed Production/Seed Technology OR Ph.D. in Plant Breeding with specialization in Seed Production/seed technology.

32. Superintendent Botanical Garden
(Rs. 700-40-1100-50-1300-Assessment-50-1600)

Essential

(i) Second class B.Sc./B.Sc. (Ag.). (ii) Second class M.Sc. in Botany. (iii) Ph.D. in Botany with specialization in Plant Ecology/Taxonomy OR Three years of teaching/research/extension experience in Plant ecology/taxonomy.

Desirable: Experience of working in a Botanical Garden.

33. Farm Manager: (Rs. 700-40-1100-50-1300)

(i) Second class B.Sc./B.Sc. (Agri.). (ii) Second class M.Sc. (Ag.) with three years experience of independent management of a large Agril. farm. OR Second class B.Sc. (Ag.) with five years experience of independent management of a large Agril. Farm.

34. Assistant Professor (Vety. Entomology): (Rs. 700-40-1100-50-1300-Assessment-50-1600)

(i) Second class B.V.Sc. & A.H. degree followed by Second class M.V.Sc. degree in Entomology/Protozoology. (ii) Ph.D. in Entomology/Protozoology OR three years experience of research/extension/teaching in Veterinary Entomology/Protozoology.

Note

1. For posts at Sr. Nos. 1 to 32, one or more of the Essential qualifications relaxable for candidates with outstanding attainments/experience.
2. For post at Sr. No. 34, qualifications are relaxable if persons with

requisite experience/qualifications are not available.

3. Special weightage will be given to extension experience possessed by the candidates, for posts in disciplines amenable to extension.
4. For posts at Sr. Nos. 22 to 27, 29 to 32 and 34, the persons who do not possess Ph.D. at the time of their selection, if selected, will have to obtain Ph.D. degree within a period of five years failing which their future increments may be stopped.

REGISTRAR

PUNJABI UNIVERSITY

Patiala
Corrigendum

Reference our advertisement No. 244/S.P.S./ESTT/78 published in the University News dated 1.1.1979. The last date for submission of applications for the posts at Serial No. 1 to 7 of the said advertisement has been extended upto 20.1.1979 and through proper channel upto 22.1.1979.

REGISTRAR

ALIGARH MUSLIM UNIVERSITY

Aligarh

Advertisement No. 27/78-79

Applications, on the prescribed form, are invited for the following post:

Reader in Economics

Scale: Rs. 1200-50-1300-60-1900 plus allowances.

Qualifications ordinarily required

A first or a high second class Master's Degree in Economics from an Indian University or an equivalent foreign qualification: (b) A research degree of a Doctorate standard or published work of a high standard; and (c) Atleast five years experience of teaching postgraduate classes and some experience of guiding research.

Desirable

Knowledge of Statistics/Econometrics.

Prescribed application forms and instructions may be had from the Deputy Registrar (Executive) either personally or by sending a self addressed envelope of 23×10 cm. Last date for receipt of applications is 30th January 1979. Incomplete applications and those received late may not be considered.

Higher initial start may be given to candidates possessing exceptional qualifications and experience. Candidates interviewed may be paid contribution towards their T.A. equal to one single Second Class Railway fare only.

Jamalur Rahman

REGISTRAR

HIMACHAL PRADESH UNIVERSITY

Recruitment Branch
Simla-171005

Advertisement No. 1/79

Applications on a plain paper under registered cover, alongwith a crossed Indian Postal Order of Rs. 10/- (Rs. 5/ for S.C./S.T.) payable to the Finance

Officer, H.P. University, Simla-5 are invited for the following posts so as to reach the undersigned on or before 31st January 1979.

I. Professors in the following subjects

Physics (specialization: Electronics, Device Physics, Basic Theoretical Studies in Solid State Physics, Nuclear Physics or Particle Physics), Physical Chemistry, History and Political Science.

II. Associate Professors (Readers) in the following subjects

(a) For Centre of Post-Graduate Studies:

Physics (Specialization: Same as given for the post of Professor), Bio-Sciences, Psychology (Specialization: Psychometrics or Educational Psychology/Guidance & Counselling or Social Psychology), Commerce & Business Administration, English (Specialization: Novel), Music, Linguistics, Laws, Chemistry (Specialization: Natural Products, Organic reactions or Organic Chemistry of Bio-Polymers), Economics.

(b) For Directorate of Correspondence Courses: Hindi, Education, Political Science, Economics, English, History & Commerce.

III. Assistant Professors (Lecturers) in the following subjects:

(a) For Centre of Postgraduate Studies:

Physics (Specialization: Same as given for the post of Professor & Associate Professor), Bio-Science, Psychology (Specialization: Development Psychology or Organisational Psychology or Personality), English (Specialization: Poetry/Novel), Hindi, Sanskrit, Specialization: Grammar, Political Science (Specialization: International Politics), German Laws and Economics.

(b) For Evening College:

Commerce (Specialization: Law & Accountancy)
Desirable

LL.B. or M.A. Economics.

IV. Registrar

V. Controller of Examinations

VI. Internal Audit Officer

VII. Instructor Steno (Hindi)

Essential qualifications and Pay Scale

I. For Professor: (a) A first or high second class Master's degree of an Indian university or an equivalent qualification of a foreign University in the subject or in allied subject with bright academic record;

(b) Either a research degree of doctoral standard or published research work of high standard in journals of repute;

(c) About 10 years' experience of teaching Post-graduate classes and/or research; and

(d) Experience of guiding research at Doctoral level.

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge in the discipline concerned.

Pay Scale: Rs. 1500-2500

II. For Associate Professor (Reader)

(a) A first or high second class Master's degree of an Indian University or an equivalent qualification of a foreign University in the relevant subject or in allied subject with bright academic record;

(b) Either a research degree of doctoral standard or published research work of high standard in the subject concerned in journals of repute;

(c) About five years' experience of teaching Post-graduate classes and/or research; and

(d) Competence to guide research.

Evidence of being engaged in making innovation in teaching methods and production of standard teaching material, will be an additional qualification.

For Law, LL.M. will be considered equivalent to a Doctoral degree.

Pay Scale: Rs. 1200-1900

III. *For Assistant Professor (Lecturer)

(a) A Doctor's degree or published work of an equally high standard; and

(b) Consistently good academic record with first or high second class (B plus) Master's degree in a relevant subject or an equivalent degree of a foreign university.

***For Lecturer in Evening College**

M.Phil. or an equivalent degree or published work indicative of capacity for independent research work; and

(b) having consistent good academic record with First or high Second class (B plus) Master's degree in the subject concerned or an allied subject, or an equivalent degree of a Foreign University.

*Provided that the Executive Council may, if necessary, relax any qualifications at (b) above on the recommendations of the Vice-Chancellor or the Selection Committee, as the case may be, if the research work of a candidate as evident either from his thesis or from his published work is considered to be of a very high standard.

Provided further that a candidate possessing a consistent good academic record may be appointed, if a candidate with qualifications at (a) above is not available or is not considered suitable, on the condition that he will have to attain the required qualifications within five years of his appointment, failing which he shall not earn future increments until he fulfils the conditions.

Explanation: Consistent good academic record means overall record of all assessments throughout the academic career leading to the Master's degree which should atleast be B plus or high Second Class.

Pay Scale: Rs. 700-1600.

IV & V. For Registrar & Controller of Examinations

Master's Degree of a recognised University or its equivalent qualification with atleast 10 years Administrative experience in a University or an educational institution.

Pay Scale: Rs. 1500-2000.

VI. For Internal Audit Officer

Must have a Bachelor's degree and must have passed the SAS examination of the Indian Audit and Accounts Department. Practical experience of working as Accounts Officer in an Audit and Accounts Office for not less than five years out of which minimum of 2 years may be of holding responsible positions in the Finance and Accounts Wing of Public Sector Undertakings/Autonomous bodies and Institutions (preferably in a University).

Pay Scale: Rs. 1100-1600.

VII. For Instructor in Hindi Stenography

BA with Hindi/Sahitya Rattan/equivalent degree. Diploma in Hindi Stenography and Hindi typewriting. Speed in Hindi Shorthand with 80 W.P.M. and 40 W.P.M. in Hindi typewriting.

Pay Scale: Rs. 300-600.

Note

Experience in Correspondence Courses will be considered as an additional qualification for posts in the DCC.

Candidates already in service should send their applications through proper channel. An advance copy, however, may be sent direct.

Candidates called for interview will have to come to the place of the interview at their own expenses and bring with them their original research papers, degrees and certificates etc. for verification.

The University reserves the right to negotiate with suitable person or persons, if necessary, who may not have applied.

The University also reserves the right to fill up or not to fill up the posts or to call only selected candidates for interview. The number of posts likely to be filled may vary.

Candidates who have applied for the above mentioned posts in response to our earlier advertisements may also apply again (postal orders need not be sent). Those applying on plain paper are requested to give the following particulars:

Name of the applicant, date of birth, address for correspondence, academic qualifications: giving percentage of marks in each examination from high school onwards, teaching/research experience with details of post held, published research work, experience of research guidance, Minimum salary acceptable & time required for joining the post in case of selection, anything else worth mentioning which is not covered above.

Dr. K.D. Gupta
REGISTRAR

ALIGARH MUSLIM UNIVERSITY Aligarh

Advertisement No. 28/78-79

Applications are invited on the prescribed form for the following posts:

1. Development Officer

Scale: Rs. 1100-50-1600 plus allowances admissible under the rules.

Qualifications

Candidates should at least be graduate of a statutory Indian or foreign University with good academic background and preferably post-graduate qualification. At least five years' first hand experience of administrative work in an academic institution and sufficient experience in the work relating to academic planning, development and implementation. Science/Engineering background desirable.

2. Deputy Registrars

Scale: Rs. 1100-50-1600 plus allowances admissible under the rules.

Qualifications

Candidates should at least be graduate of a statutory Indian or foreign University with good academic background and preferably post-graduate qualification. At least five years' of first hand experience of academic administration at the University or equivalent level—including experience of conducting examinations of a Board or University.

3. Assistant Registrars

Scale: Rs. 700-40-900-EB-40-1100-50-1300 plus allowances admissible under the rules.

Qualifications

A degree from a statutory Indian or foreign University with at least five years' experience of academic administration in a responsible supervisory capacity preferably in a University.

4. Assistant Accounts Officers

Scale: Rs. 700-40-900-EB-40-1100-50-1300 plus allowances as admissible under the rules.

Qualifications

At least a graduate. Ordinarily, experience of Accounts, including pre-audit work and finance for 7 years, of which not less than 5 years service should be in a supervisory capacity in a Govt. or Semi-Govt. organisation or a University or a Public or Private enterprise of repute or a firm of Chartered Accountants.

Desirable: Chartered Accountant.

Prescribed application forms & instructions may be had from the Dy. Registrar (Executive) either personally or by sending a self-addressed envelope of 23×10 cm. Last date for receipt of applications is 25th January, 1979. Incomplete applications and those received late may not be considered.

Higher initial start may be given to candidates possessing exceptional qualifications and experience. Candidates interviewed may be paid contribution towards their T.A. equal to one single second class railway fare only.

Jamalur Rahman
REGISTRAR

LUCKNOW UNIVERSITY Lucknow

Advertisement No. 1/1979

Applications are invited from candidates possessing a graduate degree in Medicine included in the Schedules of the Medical Council of India Act 1956, with a good academic record and post-graduate degree in the subject concerned (M.S./M.D./Ph.D./D.Sc./F.R.C.S./M.R.C.P./M.R.C.S. or equivalent for the following posts in the K.G. Medical College, Lucknow University, Lucknow.

Professor in the Grade of Rs. 1200-50-1500-60-1800

1. One Professor—Medical Chemistry and Chemical Pharmacology in the Department of Pharmacology & Therapeutics.

Qualifications

Essential

M.Sc. (Organic Chemistry) or M.Sc.

(Biochemistry) and Ph.D. or D.Sc. in Biochemistry or Organic Chemistry.

Candidates must possess five years' teaching experience in the subject concerned as Reader or in an equivalent post.

Lecturers in the Grade of Rs. 650-30-800-40-1300 Plus Dearness allowance as admissible under the Rules:

2. One temporary Lecturer in Anatomy.
3. One temporary Lecturer in Pathology.
4. One temporary Lecturer in Medicine.
5. One Lecturer in Medicine (Heart Diseases)
6. One temporary Lecturer in Neuropsychiatry (likely to be made permanent) in the department of Psychiatry.
7. One temporary lecturer in Psychotherapy (likely to be made permanent) in the Department of Psychiatry.

Candidates must possess three years' experience as Tutor, Registrar, Demonstrator or in an equivalent post.

General

For purposes of qualifications required for the above posts, the degree obtained in a subject taught in a department which is subsequently constituted into a separate department, shall be deemed to be the degree in the subject concerned for the newly created department.

It is not necessary to fill all or any of the advertised posts. Relaxation in the prescribed qualifications may be made in exceptional circumstances in accordance with the Ordinances.

Benefit of Provident Fund available for permanent posts as admissible under the rules, on confirmation period of probation for permanent posts is one year.

No consulting/private practice is allowed but the incumbents including the post No. 1, if the selected candidate also possesses medical qualifications as at para 1 above, will be given 50% of the pay as Non-Practising Allowance subject to a maximum of Rs. 600/- per month on the condition that the total emoluments including the Non-Practising Allowance, will not exceed Rs. 2,700/- per month.

Candidates who have already applied for post No. 1, vide this office advertisement No. 10/1977 dated 26.5.1977, need not apply again. Such candidates may, however, intimate their additional qualifications, change of address etc. if any.

Applications on the prescribed form (available from the office of the Registrar), accompanied with a self addressed envelope 10 cm.×13 cm. in size, with the recent testimonials, publications, etc. should reach the Registrar, Lucknow University, Lucknow by February 2, 1979. Candidates who are in service, should send their applications through proper channel. Application forms to outstations will be issued upto January 25, 1979.

B.N. Singh
REGISTRAR

Punjab Agricultural University Publications

Punjab Agricultural Handbook (Printed every year in January)	7-00	Marketing of Rice in Punjab (Erstwhile)	3-25
Farmers' Guide	5-00	Marketing of Groundnut in Punjab	3-15
Package of Practices for Rabi Crops (Printed every year in October)	3-00	Marketing of Maize in Punjab	2-50
Farm Buildings in Punjab	7-00	Impacket of Changing Conditions on Grain Marketing Institutions and the Structure of	
Reclamation of Alkali Soils	1-20	Grain Markets in the Erstwhile Punjab	5-00
Rats & their control	3-00	Agri. Growth Rates of Punjab	1-10
Horticultural Operations the Year Round	6-00	Soil Fertility and Fertilizer use in Ludhiana Distt.	3-50
Cotton Cultivation	3-00	Application of Programming Techniques to Indian Farming Conditions	2-00
Maize Cultivation in Punjab	1-10	Organisational & Institutional Implications of Rapid Growth and Commercialisation of	
Gram Cultivation	1-50	Punjab Agriculture.	3-50
Barley Cultivation	1-00	Agricultural Atlas of Punjab	24-00
Cultivation of Root Crops	1-00	Genotype—Environment Interaction—Its	
Cultivation of Phalsa	2-00	Measurement and Significance in Plant Breeding	2-50
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Litchi Cultivation	1-50	Shipper—A New Water Melon	1-20
Soybean Cultivation	1-50	Studies on the Transplanting of Cucurbits	1-50
Diseases of Ornamental Plants	2-50	Bibliography of the Agricultural Zoology--	
Removal of Stains from Fabrics	3-00	Entomology Work conducted in Punjab	7-00
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ALIGARH MUSLIM UNIVERSITY

Aligarh

Advertisement No. 26/78-79

Applications, on the prescribed forms are invited for the following posts:

1. Professor of West Asian Studies (Political Development)

Scale: Rs. 1500-60-1800-100-2000-125/2-2500 plus allowances.

Qualifications ordinarily required

(a) A first or a high second class Master's Degree in the subject concerned of an Indian University or equivalent foreign qualification; (b) A research degree of a doctorate standard or published work of a high standard; and (c) At least ten years experience of teaching postgraduate classes and guiding research.

Desirable

Sufficient amount of research experience and published works.

Wide experience and understanding of contemporary political developments of West Asia and North Africa.

General understanding of international political situation.

Considerable amount of teaching and/or guiding research experience.

2. Professor of Urdu (Indian Aesthetics and Urdu Literature).

Scale: Rs. 1500-60-1800-100-2000-125/2-2500 plus allowances.

Qualifications ordinarily required

(a) A first or a high second class Master's Degree in the subject concerned of an Indian University or equivalent foreign qualification; (b) Research degree of a Doctorate standard or published work of a high standard; and (c) At least ten years experience of teaching postgraduate Classes and guiding research.

Desirable

(a) Knowledge of Sanskrit or Arabic or Persian Literature.

(b) Knowledge of Western Aesthetics.

(c) Knowledge of Stylistics.

3. Professor of Statistics (Temporary),

Scale: Rs. 1500-60-1800-100-2000-125/2-2500 plus allowances.

Qualifications ordinarily required

(a) A first or a high second class Master's Degree in Statistics of an Indian University or equivalent foreign qualification; (b) A research degree of a Doctorate standard or published work of a high standard; (c) At least 10 years experience of teaching post graduate classes and guiding research.

4. Professor of Botany

Scale: Rs. 1500-60-1800-100-2000-125/2-2500 plus allowances

Qualifications ordinarily required

A first or a high second class Master's Degree of an Indian University or equivalent foreign qualification; (b) Research degree of a Doctorate standard or published work of a high standard; and (c) At least ten years experience of teaching postgraduate classes and guiding research.

5. Professors of Electrical Engineering (Three posts—two permanent posts including one Plan post and one temporary post)

Scale: Rs. 1500-60-1800-100-2000-125/2-2500 plus allowances.

Qualifications

- (1) A first or High Second Class Basic Degree in Electrical Engineering.
- (2) Ordinarily postgraduate degree in Electrical Engineering.
- (3) Ordinarily 10 years experience of which 5 years should be in a position of responsibility in teaching in an Engineering Institution of a degree standard and/or research.

Desirable

- (1) Published research work.
- (2) Area of specialization:
 - (i) for general posts & (ii) for Plan post.
 - (i) Electronics/Circuit & Systems/ Elect. Machines/Power systems/control systems/Instrumentation.
 - (ii) Communication Engineering.

6. Readers in Elect. Engg. (Two Plan posts)

Scale: Rs. 1200-50-1300-60-1900 plus allowances.

Qualifications

Basic Degree in Elect. Engg. & seven years' experience; or Master's degree in Elect. Engg. with five years' experience or Doctorate with two years' experience of which two years' should be in teaching in an Engg. institution of a degree standard and/or research.

Desirable

1. Published research work.
2. Specialization in
 - (i) Communication Engg.
 - (ii) Bio-Electronics/Power Electronics.

7. Reader in Persian (temporary but likely to become permanent)

Scale: Rs. 1200-50-1300-60-1900 plus allowances.

Qualifications ordinarily required

(a) A first or a high second class Master's Degree in the subject concerned of an Indian University or an equivalent foreign qualification. (b) A research degree of a doctorate standard or published work of a high standard; (c) At least five years experience of teaching Postgraduate classes and some experience of guiding research.

Desirable

- (i) Wider study of Persian Classics;
- (ii) Intensive research pursued in the field of Pre-Mughal Persian literature produced in India.

Prescribed application forms and instructions may be had from the Deputy Registrar (Executive) either personally or by sending a self addressed envelope of 23x10 cm. Last date for receipt of applications is **30th January 1979**. Incomplete applications and those received late may not be considered.

Higher initial start may be given to candidates possessing exceptional qualifications and experience. Candidates interviewed may be paid contribution towards their T.A. equal to one single Second Class Railway fare only.

Jamalur Rahman
REGISTRAR

THE MAHARAJA SAYAJIRAO UNIVERSITY OF BARODA

Baroda-390002

Notification No. 11

Applications are invited for the following posts in prescribed forms which

will be available upto 12th February, 1979, along with the details of qualifications and Specialization from the undersigned on pre-payment of Rs. 2.00 (Re. 00.50 for members of Scheduled Castes/Scheduled Tribes) by Crossed Indian Postal Order payable to Registrar, M.S. University of Baroda along with a self addressed envelope of 30cms. x 12cms. for each post.

The applicants at the time of requesting for the prescribed forms should mention very specifically the post for which the forms are required. The Scheduled Castes/Scheduled Tribes candidates will attach a certificate to this effect.

Faculty of fine Arts

(1) Reader in Applied Arts

Lecturers in (1) Applied Arts (Two posts) (2) Photography

College of Indian Music, Dance and Dramatics

Professors of (1) Music—Two Posts (One post is for the Department of Indian Classical Music (Vocal) and one is for Department of Music (Instrument) (2) Dramatics (3) Dance

Readers in

(1) Music (Vocal) (2) Tabla

Lecturer in (1) Sitar—Two posts (2) Violin (3) Music (Vocal) (4) Dance (Mridangam)

Scale

Professor: Rs. 1500-60-1800-100-2000-125/2-2500

Reader: Rs. 1200-50-1300-60-1600-Assessment-60-1900

Lecturer: Rs. 700-40-1100-50-1300-Assessment-50-1600

The posts carry usual allowances in accordance with the rules of the University.

Even though no individual post is declared as reserved one post of a lecturer is reserved for Scheduled Tribes candidate.

Preference will be given to Scheduled Tribes candidate who is considered fit. In the case of Scheduled Tribes candidate interviewed by the Committee, if suitable candidate is not available for appointment to the post of Lecturer, the Selection Committee may recommend suitable candidate/s for appointment, as Research Associate on Rs. 1,000/- or Rs. 1,200/- or Rs. 1,400/- p.m. net depending upon the merit, for an initial period of three years extendable upto five years. This person may later on compete for the post of Lecturer as and when vacancy occurs. However, the requirements for the qualifications will not be relaxed.

The application form accompanied by crossed Indian postal order payable to the Registrar, M.S. University of Baroda, worth Rs. 10/- for the posts of Professors and Readers (SC/ST candidate Rs. 2.50) and for Lecturer worth Rs. 8.00 (SC/ST candidate Rs. 2.00) should reach on or before 19th February, 1979. The candidates if called for interview will have to come at their own expense.

K. A. Amin
REGISTRAR

Commonwealth Meet on Non-Formal Education



Prime Minister, Shri Morarji Desai, inaugurating the Commonwealth Conference on Non-Formal Education for Development in New Delhi. Dr. P. C. Chunder, Union Minister for Education, Smt. Renuka Devi Barkataki, Minister of State for Education and Dr. Malcolm S. Adiseshiah, Chairman of the Conference are also seen in the picture. (Report on page 72)

ALIGARH MUSLIM UNIVERSITY ALIGARH-202001

Advertisement No. 29/78-79

Applications, on the prescribed form, are invited for the following post:

Principal, J.N. Medical College, in the scale of Rs. 1500-60-1800-100-2000-125/2-2500 plus allowances as admissible under the rules and nonpractising allowance provided he is also Professor of the subject of his specialisation with clinical duties attached to it.

"Candidates must possess a Medical qualification included in the first or second schedule or Part II of the third schedule (Other than licentiate qualifications) of the Indian Medical Council Act, 1956. Holders of educational qualifications included in Part II of the third schedule should fulfil the conditions stipulated in Section 13(3) of the Indian Medical Council Act, 1956. Must possess a basic University or equivalent qualification entered in schedules under State/Central Medical Registration Act."

Qualifications

M.D. / M.S. / M.R.C.P. / F.R.C.P. / F.R.C.S. or an equivalent qualifications in any branch of Medical Science. At least five years' experience as Professor in a Medical College.

Preference will be given to those who have long experience as Professor/Head of a Department or Principal of a Medical College particularly those who have held responsible positions connected with the establishment of a teaching hospital.

The Principal of the College will also have to work as the Chief Superintendent of the Medical College Hospital.

Prescribed application forms and Instructions may be had from the Dy. Registrar (Executive) either personally or by sending a self-addressed envelope of 23 x 10 cm. Last date for receipt of applications is **9th February, 1979**. Incomplete applications and those received late may not be considered.

Higher initial start may be given to candidates possessing exceptional qualifications and experience. Candidates interviewed may be paid contribution towards their T.A. equal to one single second class railway fare only.

**Jamalur Rahman
REGISTRAR**

JAMIA MILLIA ISLAMIA

Jamianagar, New Delhi-110025

Advt. No. 11/78-79

Applications on the prescribed form which can be had from the Registrar's Office on any day (except Sundays and Holidays) between 10.00 a.m. to 12.00 Noon or by sending a self addressed and duly stamped (25 paise) envelope of 10 x 23 cms., are invited along with the postal order of Rs. 3/- for the following posts so as to reach the Registrar by 1.00 p.m. on **February 7, 1979**

Adequate knowledge of Urdu and Hindi is essential for non-teaching posts and ability to teach in Urdu and Hindi

is a desirable qualification for teaching posts.

D.A., C.C.A., H.R.A., P.F., Gratuity, Pension and such other facilities will be given as per Jamia rules.

Relaxation in any of the qualifications may be made on the recommendation of the Selection Committee in exceptional cases.

Two Readers (Grade: Rs. 1200-1900); one each in Islamic Studies (permanent) and Arabic (leave vacancy).

Good academic record with a first or high second class Master's Degree of an Indian University or an equivalent foreign qualification; a Doctorate Degree or equivalent published work in the subject concerned, and independent published work of a high standard in addition to the published work referred to above and at least 5 years' experience of teaching Hons./Post-graduate classes or 10 years' experience of teaching undergraduate classes.

One Reader in Art & Craft Education (1200-1900).

(a) A good second class Masters' degree in Art or Craft Education, (b) Five years' experience of teaching Art or Craft to Post-Graduate classes, (c) Knowledge of History of Art & Art Appreciation, (d) Experience of Research work, (e) Practical experience in the field of Plastic Arts desirable.

Three Lecturers (700-1600); One each in Economics (permanent), Medieval Indian History and Geography (leave vacancy).

Essential
Consistently good academic record with a first or high second class (B+) Master's Degree or an equivalent degree of a foreign University in a relevant subject/subjects.

Having regard to the need for developing interdisciplinary programmes the Master's/Doctor's degree may be in relevant subjects.

Desirable

(in order of preference):—(i) A Doctor's Degree/or Evidence of research work of equivalent standard in the relevant subject. (ii) Teaching experience of Degree/Post Graduate Classes.

Provided that if a teacher is not a Ph.D. at the time of his/her appointment and does not qualify himself/herself for the award of a Ph.D. Degree from a recognised University in the subject which is being taught by him/her within the period of five years from the date of his/her appointment or does not give evidence of research work of equal standard within that period in the relevant subject/subjects, he/she shall not be entitled to any future increments after the expiry of the said period of five years till such time he/she fulfils the above mentioned requirements.

For the post of Lecturer in Medieval Indian History knowledge of Persian is a desirable qualification.

For the post of Lecturer in Geography preference will be given to those who have studied Mathematical Geography in M.A. or M.Sc.

One Lecturer in Art Education (700-1600)

Essential

(1) At least high Second Class Higher Secondary or its equivalent. (2) At least high Second Class Diploma in Fine Arts of 4 or 5 years duration from a recognised Art Institution or its equivalent.

Desirable

(1) At least two years of teaching experience. (2) At least high Second Class B.Ed. (Art) or equivalent Professional training. (3) Professional standing as an artist with one-man shows and participation in National and International exhibitions.

One Wood Work Instructor (440-750)

Essential

(a) School Education upto VIII standard. (b) I.T.I. 2 years Diploma in Wood Work.

Desirable

(1) A professional Carpenter, highly competent in furniture making. (2) Five years experience as carpenter in furniture making in a reputed firm. (3) Knowledgeable in polishing and maintenance of tools.

Note: Specimen of finished objects in Wood to be shown at the interview.

One P.A. to the Vice Chancellor, Grade : Rs. 425-700 (leave vacancy).

(a) A graduate. (b) Minimum speed 120 w.p.m. in shorthand (English) & 40 w.p.m. in English Typing. (c) Previous experience of drafting and noting will be preferred. (d) Adequate knowledge of Urdu and Hindi.

Stenographer (425-700)

Higher Secondary with a minimum speed of 40 w.p.m. in English typing and 120 w.p.m. in Short hand in English. Knowledge of Urdu.

Desirable

(1) Graduate with previous experience of noting and drafting in English. (2) Knowledge of Hindi.

Office Assistant (425-700)

A second class graduate with at least 8 years' experience on a post not lower than Senior Clerk in an office of repute.

Senior Clerk (330-560).

(1) Graduate; (2) Good knowledge of Urdu, Hindi & English. (3) Knowledge of Typing, Filing and accounts preferable.

Steno-Typist (330-560)

Matriculate with proficiency in typing with a speed of about 35 w.p.m. and proficiency in Shorthand with a speed of about 80 w.p.m.

Clerk/Typist Grade: Rs. 260-400 (One Urdu Typist-leave vacancy).

(1) Matriculate. (2) Qualifying in the prescribed test in English/Urdu/Hindi respectively and Typing with a minimum speed of 35 w.p.m. (3) Knowledge of Urdu.

Desirable

Previous office experience. (2) Knowledge of Hindi.

Important

Incomplete applications in any form i.e. without attested copies of certificates, degrees, diplomas, mark-sheets, prescribed application fee and on plain paper will not be entertained.

**Zamir Hasan
Offg. REGISTRAR**

UNIVERSITY NEWS

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*Opinions expressed in the articles
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not necessarily reflect the policies
of the Association*

Hony. Editor : ANJNI KUMAR

Education for Optimizing Vocational Mobility

Motilal Sharma*

Education is nothing but preparation for life. Any system of education whether formal or non-formal, general or special aims at development of human potential. In other words education prepares *potential* individuals who contribute to further development of a social system in terms of strengthening the economy of the system, culture of the system, technical competence in the system etc. In short educational action aims at preparation for work and active life of an "individual" and a "nation".

'General Education' in real sense of the term, means a system of education by which basic skills, common to all fully functioning members of a society are developed. Firstly, general education should equip an individual with conceptual and sound language skills so that one can understand his role, other's expectations from him as an individual, as a member of society, demands of *today* in context, with *yesterday* and *tomorrow* and thus conceptualize needs of *present*, one is living in and *future*, one will enter in. Basic education must equip an individual with these basic skills and if it has to be so then 'Mathematics' and 'Language' should be taught as core subjects and while developing competence in these two areas an individual must get fundamental knowledge about the culture and socio-economic conditions of the society he is living in, the technological needs of the society and so on. Primary education should not be examination-oriented but it should prepare an individual for more complex system of education which may again be technical, theoretical or vocational. In fine I would like to say that primary education is a preparatory stage for all. At this stage emphasis should be on 'Conceptual' and 'Language' development.

At the second stage, the system of general education should provide chance to the students to get varied experiences of different types of vocational, technical, economic and social fields of advance education i.e. individual should be exposed to different pedagogical, technical, professional and vocational branches of knowledge and thus one should get minimum essential knowledge of all the fields which are related to real life. Manual work must be essential at both the stages. Physical education programme should also be an integral part of education at both the stages. Manual work must be *productive* and it must contribute to the development of the system the child is living in. Programme of manual work at this stage should build foundation of positive attitudes towards work (Manual) and inculcate habits of manual work. Programmes like 'work-experience' socially useful productive work as they exist to-day

*Reader, Deptt. of Education, South Gujarat University.

will not help in developing such attitudes and habits. If we are *sincerely* interested in developing habits of manual work among youth, then these programmes should be *realistic* in place of *ritualistic*. Again I would like to say in brief about my concept of physical education which is very different from what exists to-day in practice. In my opinion physical education programme should aim at preparing a *potential healthy* individual who will contribute to the society through his/her productive ventures. He will prove to be an asset to the society both as an intellectual and professional; actively participate in the world of work and execute his role effectively. He will never be an *intellectual parasite* to the society. Secondly looking into a controlled situation physical education programme should prepare an individual for *active participation* in daily work. Idea of 'games complex' being tried by the Department of Education, Rajasthan is worth appreciation. Similarly 'Health clinics' 'Yoga complexes' may also be developed and tried.

Now, at this stage when student is fully equipped with 'conceptual' and 'Language skills', one is *healthy potential organism*, one has gone through varied experiences which reflect needs of the society, we can think of introducing specialization. By specialization I mean advance theoretical as well as practical (skill oriented) course of a particular field specially in context with the existing socio-economic structure of the social system, technological and pedagogical requirements for development of the system and its culture. It can be done by introducing *major*, and minor fields of study. These combinations be of such a nature that a students who has opted social science as major field also gets minimum essential knowledge of technology, physical science etc.etc. and similarly a student who has opted for technology as a major field gets chance of equipping himself/herself with minimum essential knowledge of the trend of Socio-economic development of society, its cultural heritage etc. etc. This is one dimension of introducing specialization in terms of branch of knowledge. Second dimension which warrants our attention is selecting individual in terms of *competence potential* for different types of courses i.e. advanced theoretical cum practical education, vocational (skilled) cum continuation education, vocational cum non-formal education. To be more concrete in terminology, I would say we must have separate systems of education for 'Bright', 'Average', 'Below-Average' children at this stage, This will help in minimizing wastage of human and material resources and at the same time help in reducing frustration which partly results from *heavier and ineffective* dose of education. In short it could be said that *type of education* should *fit* to the *individual potential*. We cannot give or develop an individual more than the potential one is equipped with. Education can actualize the individual potential, it cannot increase this potential significantly. Thus a system of general education should have sub-systems of intellectual, technological and manual training. It should provide equal chances of development to 'Bright', 'Average' and 'Below Average' intelligent individuals to actualize the potential they are having, through intellectual-cum-manual

training or Vocational-Manual cum intellectual training. This strategy may be used from primary to higher education. At times in the name of broadening or enriching education system we go on adding text-books after text-books and it is observed that such courses neither have any relevance with real life situations nor are fit for a particular target group and thus by framing such courses of studies (education) *educationists* create *danger* to the society while training courses curriculum we should involve educationists, teachers, administrators, businessmen, agriculturists, industrialists, politicians, social works, technologists etc. etc. Today situation is quite different participatory approach is never followed. For instance we take example of Rajasthan. The Board of Secondary Education which as per its *role* is and should be only examining and certificating body but to-day it prescribes syllabus, it prescribes requirements for recognition of an institution etc. etc. In short, reality is that it has monopolized over secondary education which, to me, not seem to be legitimate. The state has got state level potential expertize agencies like SIE, SISE etc. etc. which can serve and provide legitimate platforms for developing syllabus and other related norms. This is true for other stage also. Anyway if at all we are concerned and feel like *broadening* general education we shall have to get rid of monopolizing agencies and develop open platforms to involve persons from different walks of society in the process of designing education system.

Again, before implementing any new system it should be examined in context with the needs of the society, clientele different target groups of individuals potential of student population for whom the system is formulated. Otherwise, experimentations with valuable time of valuable human resources (children) is not legitimate. We must have empirical proofs, legitimate reasons for introducing any system. For example we had systems viz 5+3+2+2+4, 5+3+3+3, 10+1+3, and now we are launching on to 10+2+3. Do we have any empirical research evidence behind this change? If not, then by introducing the different *permutations, combinations* in terms of years we are playing with *valuable time* of *valuable human potential* (children) of the nation.

Furthermore, these days in the world of education a new hippy culture is developing. Followers of this culture in India very enthusiastically accept and spread *whims* of people like Ivan Illich, Everett Reimer and by doing so lounise them without any reason. Talkings too much about the light readings like 'School is Dead', 'De-Schooling Society' and making recommendations accordingly can create danger to the *developing* system of education in the country. At this juncture our responsibility is that we should examine different thoughts in context with *demands, values, economy, trends of development* of our socio-economic-political system. Educationists and administrators, if at all they feel concerned about remodelling of the system of 'General Education' they may possibly like to give ears to the demands of industries, shopping centres, farms, kitchens etc. etc. of this land. They may like to re-examine Indian systems of education pro-

pounded from time to time in the long history of the country.

Organization of leadership camps for youth can be one more potential step towards enrichment and strengthening of general education. Through such camps youth could be equipped with real leadership skills and they should be given *real* experience of *actual* life, they are preparing for. Establishment of community science centres on the lines of Sarabhai community science centre, Ahmedabad may further strengthen the foundations of general education. Vocational and education camps can also be held for broadening the general education. Furthermore system of vocational education through institutions of general education has proved in-effective and the only alternative, if there can be any, is education through vocational centres.

Coming to the second dimension i.e. maximizing vocational mobility I would like to draw your *kind* attention to three things : (i) Basic skills; (ii) Risk taking ability or degree of self-confidence; (iii) Perception of Socio-economic structure of the society. An individual can think of changing his/her vocation or profession if he/she possesses basic skills for the vocation the individual is planning to change to. For instance we can take example of I.A.S. and G.A.S. persons who can execute their roles successfully in different departments. Secondly *Vocational-Culture* of a country also influences vocational mobility. Thirdly, the perception of socio-economic structure and trend of development of the society also influences decision regarding change from a vacation to another.

So if we want to optimize vocational mobility, certainly our education system should concentrate first on developing basic skills viz. perceptual skill, decision making skill, skill of planning for self development etc. Secondly our system of 'General Education' should be able to develop *positive* and *real* self perception among individuals. Thirdly *continuing* and *non-formal technical education centres* should be developed. By 'technical education' I do not mean only polytechnic type courses or engineering courses but I mean that such centres should organize training in technical skills for different jobs so that an individual could prepare for another job of his/her choice, at the same time remaining in a different job. There should be freedom for all the individuals in different jobs to receive any other training they are willing to. Then job incumbents be allowed to go for part-time jobs even though they are in a permanent job. This will provide them experience regarding benefits and conditions of other jobs which may attract them to shift from their permanent job. For instance teachers may be allowed to take part-time job of LIC agents, commercial agents etc. etc. Such changes in the system of general education and vocational system will encourage vocational mobility.

Now looking into professional training system, it should be developed in context with the needs of 'General Education' system. Training programme should concentrate on developing basic skills for 'educating' youth in different fields of knowledge and

skills. It warrants an effective training methodology. At the moment we are having an *ill* system of teacher training lacking both in *training methodology* and *competent* trainers. This applies to both pre-service and inservice training programmes. We don't have any system for training trainers for preparing teachers, school headmasters, educational managers etc. etc. Again, whatever training programme we have is not very relevant to practical *life* of a school. Whatever is given in the name of training is never utilized in the real class-room situation. It is because the fact that our courses are *too theoretical*. Hence training courses need to be redesigned in terms of skills. Because, after all teaching is nothing but creating environment and designing *life* of the class-room. It warrants that a teacher should be well equipped with technical conceptual and human skills so that he could execute his role as *human engineer* by creating a congenial stimulating environment in the class-room and in the school which in turn influences *growth* of the child. Again teacher training should not only provide training in teaching methods and skills but teacher during training *must* get basic knowledge about management, accounts, health and hygiene, medicine, agriculture, some *productive* vocation, so that he can, in *real sense* help in developing and executing vocational courses, community service programmes etc. etc. in the school and in the long range he/she might be able to shift to any other vocation of his choice. Similar changes may be introduced in the training of doctors, engineers. etc. etc.

As has already been suggested for youth, for stimulating vocational mobility orientation courses for different vocationas may be organized through 'Vocational training camps' for the job incumbents from different vocations. Such camps will stimulate vocational mobility we are aiming at. In fine to achieve the target of real and full education and vocational mobility we should have an objective based system of education and professional cum vocational training. □

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The Journal is mailed on 1st & 15th of every month.

Case for Reform of Medical Studies

B. Ramamurthy*

"Medical education techniques in India are 50 years behind times". Comments have been heard for some years now that there is a general dissatisfaction among the public, among the medical students and young doctors, as well as in the minds of some of the senior medical educationists of the country that the methodology of medical education in our country is outmoded and the techniques adopted in the vast majority of the medical colleges in India are obsolete. "The medical course is tedious, 'boring', prolonged and in the end the final products are not in a fit state of preparation to serve the multiple health and medical needs of the Indian Community". Such a dissatisfaction has also been internationally expressed by the derecognition of all the Indian medical degrees by almost all the countries of the world. On the contrary, it cannot be denied that many products of Indian medical education have done well for themselves in India as well as in the various foreign countries where they have gone to work and settle. This may imply that all is well with the Indian medical education and no changes are indicated.

In spite of numerous conferences on medical education, no radical changes in the context of medical education or teaching techniques have been introduced for the past ten decades in the majority of the medical colleges in the country.

The first obstacle to any improvement in the technique and context of medical education to make it more interesting to the medical students and more meaningful to the public, is a lack of knowledge or appreciation amongst medical teachers of what the final product of their teaching should be. This aspect has been frequently discussed by the senior medical educationists of the country, who have emphasised that what the country needs is the "Basic Medical Doctor" with the ability to diagnose and treat common illnesses, to diagnose and advise on serious illnesses, and to look after the preventive aspects of health and general welfare of the patient, the family and the community. To achieve this aim, the contents of the medical education have to be remodelled and the techniques of imparting such knowledge needs to be modernised. This has not been put into effect in the vast majority of medical colleges. By an appreciation of the aims of medical education and by applying modern techniques of teaching, not only will society benefit getting the right type of medical aid, but medical education

itself will become more interesting and can be completed in a much shorter time than the present 6½ years. With a proper rearrangement of the syllabus, shedding all unnecessary areas of information never needed in later life and by increasing the practical and field work of the medical students, a period of atleast 18 months may be off from the medical education, thus saving an enormous amount of national manpower, resources and money.

It may be worthwhile to give an example of the present technique of medical education. If one would like to train a radio or transistor mechanic one would set about by letting the trainee know what the radio is for, then give him the basic outlines of the structure and function, demonstrating to him the various connections. Nobody would dream of asking the radio mechanic to memorise for example "the green wire starts from the right top portion of the cabinet and proceeds obliquely amongst the multitude of the red and blue wires to the left bottom corner of the cabinet, lying above the loud speaker, below the valve etc." But this is exactly what the medical student in Indian medical colleges is made to do when he memorises the facts of anatomy without any idea of their underlying function.

Similarly, when he is taught physiology, he has no concept of the structural basis of function or the relationship of such detailed knowledge to the disorders of function which he will encounter in diseased persons. It would be right to say that in no other technical branch of knowledge is the teaching of function and structure so dissociated as in the first two years of medical teaching in India. The anatomy, physiology and the biochemistry course run parallel to each other rarely meeting. Thus the students memorise a very large number of facts without laying down the basis of reason and logic which is the only way by which the knowledge can be retained and recalled when needed. He does not see a patient with disordered function nor does he set foot in a hospital to have an idea of what his real function is going to be.

At the end of the third year when the student does clinical medicine, in the hospital, he finds that he has forgotten most of the facts.

In the clinical years the tragedy lies in the inevitable emphasis that is laid upon, rare and serious diseases that naturally get referred to a teaching hospital. The enthusiastic junior teachers in medicine with a natural pride in their own knowledge teach the students all about the rare and complicated diseases seen in the wards. This teaching is reinforced by long lecture delivered in the classroom in the somnolent post-lunch hours of hot humid afternoons, during which a majority of students obey the laws of physiology and stay in the land of sleep. There are few seminars, or discussion in small group and practically no encouragement to the Indian medical student to ask questions and seek answers. At the end of the three clinical years, we have a product which has again acquired a large fund of memorised knowledge about

(continued on page 68)

*Neurosurgeon, Madras.

Autonomy and Academic Freedom in Australian Universities

S. Santanagopalan*

Australian Universities are autonomous bodies constituted by their own Acts of Parliament and legally responsible for the conduct of their own affairs. Since they are almost totally dependent on the Australian Government for the funds, it would of course, be possible to attach grants conditions which eroded their responsibility for determining the expenditure. Such conditions could be by way of providing grants for specific purposes or by requiring universities to pursue particular policies in the courses they offered and the manner in which they were taught. Australian Universities Commission is opposed to such a procedure. On the other hand, the Australian Universities Commission's commitment to university autonomy reflects much more than a desire to protect the formal status of the university.

It stems from a conviction that universities will in general better achieve their purposes by self-government than by detailed intervention on the part of the public authorities. The purposes for which universities are founded and for which society continues to maintain them include the preservation, transmission and extension of knowledge, the training of highly skilled manpower and the critical evaluation of the society in which we live. No university performs its functions perfectly; and it is not difficult to criticise aspects of university teaching and administration. Nevertheless the educational authorities in Australia are convinced that society is better served if the universities are allowed a wide freedom to determine the manner in which they should develop their activities and carry out their tasks.

In a free society, universities are not expected to bend all their energies towards meeting so-called national objectives which, if not those of a monolithic society, are usually themselves ill-defined or subject to controversy and change. One of the roles of a university in a free society; is to be the conscience and critic of that society; such a role cannot be fulfilled if the university is expected to be an arm of government policy. Moreover, universities must prepare their students for life in a world, the characteristics of which are necessarily imperfectly foreseen. An institution which geared its activities to known requirements could hardly provide an education appropriate to meet as yet unknown problems.

Universities would not make their full contribution to social life if they were unresponsive to community needs. In particular, universities historically

have performed the function of being a main source of highly trained manpower, especially in the professions, and it is usually the case that governments are in a better position than individual universities to estimate the manpower requirements of these professions. It is not therefore an infringement of a rationally justifiable autonomy if universities are asked to respond to government requests to expand facilities to train students for the various professions, provided the type of training that is necessary is appropriate to be conducted within a university. During the last triennium (1973-75), the Australian Government had indicated expansion in the areas of social work, special education, medicine and dentistry. Expansion in these areas was achieved by the provision of special grants. In addition, the Australian Government had encouraged university medical schools to include teaching in community practice and clinical pharmacology within their curricula; providing special grants. In all cases, universities had responded to these government initiatives.

Universities would also weaken themselves if they did not respond generally to many of the felt needs and concerns of the community. For example, environmental questions have become of great public concern in recent years and this has suggested that universities can make a substantial contribution to the understanding and possibly to the solution of such problems. In fact, the Australian universities have developed their interests in these fields.

There is no conflict between respect for university self-government and the encouragement of universities to respond to community needs. As pointed above, the case for autonomy rests on a belief that universities will serve their purposes better if they enjoy a very large measure of autonomy. However, the fulfilment of some, at least of those purposes, requires a responsiveness to community needs. These needs are sometimes expressed by the university community itself or by its local community or by Central or State Government. Universities should be expected to consider such expressions of need sympathetically, but critically, and the manner of response to them should be a matter for their own judgement. Such a response should not always be conditioned on the availability of special funds. Recurring funds to the universities are provided as block grants, except the earmarked grants for special purposes.

In two universities in Australia, the trend towards wider participation in institutional decision-making

* Deputy Registrar, Madurai Kamaraj University.

was noticed. This enabled public participation and provided an opportunity for the universities to gauge the trend of community needs in education. The University of Melbourne has established a University Assembly and the University of Wollongong an Academic Assembly. The first body is an elected assembly, broadly representative of all sections of the university community. The latter body includes all members of the academic staff and is strengthened by the addition of the librarian and twenty elected student members. Both bodies constitute forums for open discussion and criticism on a university-wide basis on virtually all matters of interest within the university. Other universities are known to be exploring the possibility of establishing university forums or assemblies, on similar lines. This provided an opportunity to the people connected with the university to think about their work introspectively, besides enabling others to express their opinion on the existing course and the needs of the community.

Universities have offered courses in response to specific community demands. The University of New South Wales, for example, has commenced offering a postgraduate diploma in current science. The course is serviced by several schools in the faculties of applied science, biological sciences, engineering and science, and aims to help graduates working in science-based professions to update and broaden their scientific knowledge. La Trobe University has introduced a one year graduate diploma in agriculture. Entry is limited to persons holding a bachelor degree in agriculture and the course has been designed specifically for graduates of three to eight years' standing having an interest in continuing education.

In Monash University, the Faculty of Law has developed new courses in fields such as Japanese Law, Poverty and Urban problems in response to community demands and has similarly introduced a master of laws by degree course work and minor thesis which is particularly popular with legal practitioners of five to ten years' practice.

Another significant feature of the universities in Australia is that the universities play a leading part in the cultural and intellectual life of the people of the place where they are situated. Some of the Departments of the Universities take active part in the annual festivals organised by the local people and Government. Many public lectures, concerts, theatrical performances and films screening take place in the campuses of the university throughout the year.

Most of the universities have one or two good theatres or halls which are considered to be fine pieces of architecture and they provide the needs of the universities, and the people of the area. The facilities available in the universities, both in the laboratories, library and class rooms are being used to the maximum by the local people and the venue of all academic, cultural and intellectual activities of the community is the campus of the university and this shows the involvement of the community in the affairs of the universities and the responsiveness of the universities to the community needs.

It would, therefore, be seen that Australian Univer-

sities maintain their academic freedom and autonomous status, and at the same time also respond to the needs of the community. Because, the community establishes the universities and the universities serve the community. □

Case for Reform of Medical Studies

(continued from page 66)

the rare and complicated disorders, about the theoretical aspects of how to diagnose and treat them, and all about the sophisticated investigations in the diagnosis of exotic disorders.

The medical student, when he finishes his final examination, has no practical knowledge of common diseases, their prevalence or their treatment. Most of them have had no practical training in the necessary basic techniques of the profession like bandaging, applying a plaster, giving injections, catheterisation, dressing, removal of sutures etc. all these being reserved to be taught during his house surgency.

One more aspect to be stressed here is that in their 5½ years of intense teaching, little emphasis is placed on community medicine, thus leaving the student blissfully unaware of the realities of the health situation in his country, outside the teaching hospitals.

What is the remedy? The problem and the remedy have been discussed ad nauseum in numerous conferences on medical education with practically no follow-up action or any change in the pattern.

Two years ago the Srivatsava Committee had suggested practical fundamental reforms in the medical education system. These reforms can easily be incorporated without financial outlay. The conference of Deans and Principals of medical colleges held in 1976 endorsed the changes. The Medical Council of India has given its seal of approval.

However, has any change occurred? Wherein lies the cause—lack of conviction amongst medical and lay administrators? Lack of will amongst teachers? Lack of policy direction from the political rulers? All these perhaps contribute to the status quo.

Without reforming our own medical education system, getting piqued by the derecognition of our degrees by foreign countries and retaliating by derecognising their degrees is an adolescent reaction. Only when we are determined to act and proceed to set our house in order, will our medical education get back its deserved tradition. □

(Courtesy: The Hindu)

Need for Change in Value System in Education

Enough has been said on the inadequacies and deficiencies of our education system. It is agreed that a large part of it is not relevant to our development needs, that it is bookish and examination-oriented, that as a social and economic input it is weak and outmoded and that it does not impart to the students a value-system that would draw out the best from them. The question is how do we change it, in what span of time and with what perspective. Promises of radical changes are galore and I would not blame you if you take them with a pinch of salt. Of course changes have to be brought about but with adequate preparation, circumspection and precaution. Otherwise, we would be commit-

involved in this issue and I am going to present my views on this aspect of the problem.

The statistics about the educated unemployed is quite revealing. If you consider graduates alone, their number is about 68 lakhs. More than 10 per cent out of these 68 lakhs (that is, nearly 7 lakhs) are without employment. This figure includes diploma holders also. Maximum unemployment is among Arts, Science and Commerce graduates; the percentage of unemployed among them is 11 to 19. The percentage of unemployed in the case of Medical, Engineering and Agriculture graduates is about 2 to 6. On the contrary, the situation regarding Veterinary graduates is completely different. Vacancies

sciences and the development of animal husbandry is quite important from the point of view of the Indian agriculture system.

I have cited this example to indicate that our value-system is lop-sided and totally unrelated to our socio-economic needs as a developing nation. Our traditional system of values and the application of our education as well as research are intimately related. This is particularly true of our social sciences. Their present state and effectiveness and the system of values that has come down to us from our traditions are all very closely connected.

The way social sciences are taught or research is conducted in these sciences in our country has certain inherent deficiencies. There is no correlation between the research and education in these sciences and the situation and needs that obtain in India. The assumptions on which the teaching and research of these sciences are based are more in consonance with the situations abroad. Many of the models used in these sciences are foreign and they are not applicable to the situation prevailing in our country. Complaints like these are heard about the research in our social science studies and many of the intelligent and mature students have started giving vent to these ideas.

The so-called difference between the utilitarian aspect of social sciences and natural or physical sciences is only apparent and superficial. Research studies in physical sciences have also a social significance. It is generally complained that the research done in the areas of physical sciences is also not relevant to our social needs. This argument is put forth again and again about technology and terms like intermediate technology, appropriate technology etc. are also used quite frequently. This implies that people have started having doubts about the relevance of the social sciences and the physical sciences to our needs.

The whole issue needs to be studied dispassionately by putting aside the temporary and some-

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ting the same blunders we did when we introduced the new pattern of education.

The new pattern of education, known as the 10+2+3 pattern, has an important objective of providing vocational and professional education on an extensive scale at the post-secondary stage. You are aware that this has not been adequately realised. One of the main reasons for this is that necessary facilities for vocational education are not available and I am sure you will say that the Government has not provided adequate funds for bringing about the desired change. I do not want to disown the responsibility of the Government in this respect. But I do not think that this is the only causal factor. I feel that there is some other question in-

exist but trained personnel is not available.

This particular situation about Veterinary graduates is eloquent. It implies that certain categories of jobs are the traditionally favourite ones. Society has conferred prestige and status on them. On the other hand, certain other jobs and disciplines are socially looked down upon. This question is mainly embedded into our social value system.

There is a big gap today between traditional views and attitudes and the present day needs of our community. Statistics show that, in India, the percentage of cows and oxen out of the total stock in the world is 20. Indian agriculture is still dependent on the use of cattle power. The study, therefore, of the veterinary

times emotional overtones attached to it.

I have no right to talk about other social sciences. As I am more intimately connected with the Science of Economics, I may only say that many times it is not seen how far the principles of Economics are related to our needs and our situation. This must be the case even with the other sciences. This does not mean that we should turn our back completely on these sciences. These sciences have a long tradition of many decades and in some cases even of some centuries. Great intellectuals of the world have contributed to the growth of these sciences. It is no use rejecting this wealth of knowledge by just labelling it as belonging to a particular country. We should regard this as our precious intellectual heritage and test its principles on the touchstone of our particular situation. Sciences grow only this way. Those who talk with contempt about the foreign models, do not seem to have developed new models in tune with our needs. It is, therefore, not very helpful to take a negative attitude about the sciences developed abroad. What is necessary in this situation is that the available scientific knowledge should be regarded as basic and then, further research in these sciences should be undertaken in the context of the Indian social situation. Whether there exists an independent discipline like Indian Economics or Indian Psychology, is a perplexing question and we need not discuss it here. But it is beyond doubt that we must bring about changes in these sciences as per our needs, and the grievance that such changes are not brought about or that they are not brought about with the speed with which they should be brought about has some substance. The reason again for this is to be found in our value system and the social structure. The universities should find out what role they can play in this context.

The social structure and values have an impact on the subjects of studies of the researchers, thinkers, students and teachers and also on their techniques of

study. Many deficiencies arise in the various areas of the subjects of study and the techniques of study as a result of the multiplicity of religions, races and castes. Because of the absence of proper integration in our society, it is difficult to have a total view and consequently the group or the caste to which the researcher or the student belongs creates barriers to rational thinking and analysis and his experience to that extent remains limited. The understanding of the situation then becomes inadequate. Indian thinking is greatly shackled in this situation. There are so many compartments in our social life that people in one social group do not know much about the way of life of the people in the other group. If scientific research is to be a fruitful experience, we have to admit that the present hierarchical social structure based on the concepts of superior and inferior status, touchability and untouchability, puts limitations on the experience and conclusions of thinkers and scientists.

We have been studying social sciences in our country for several years. In spite of this tradition of many years, Indian scientists have not been able to contribute substantially and fundamentally to the growth of social sciences. It is seen that the genre special to the Indian soil and situation has not yet developed. On the contrary, the situation in this respect is very strange. Taking the example of Economics, it is observed that during the post-war period, the problems of under-developed countries have been studied in greater detail by the Western scholars. They have thrown light on many of the assumptions and hypotheses about the structural and institutional aspects of the under-developed countries. This means that Western thinkers have made a study of our society more closely than what we have been able to do.

If this situation is to be changed, the intellectual atmosphere in the universities must be changed. The researchers, teachers and students must mix more extensively with the outside world. They should understand more intimate-

ly the problems of the outside world. This is the only way to remove the unrealistic situation that surrounds the research and education in social sciences.

There is a long tradition of voluntary social service in Maharashtra. Many organisations and people have been working in the rural areas for a long time. In Pune, an organisation known as Gramayan has been bringing together different voluntary agencies for exchange of views on rural reconstruction. But the main subject of my talk today is neither rural development nor work in the rural areas, but how far work in these areas and the experience in this field will be reflected in our researches and education. I also want to find out how this experience can stimulate studies in the different branches of knowledge. One of the experiments in this connection which deserves mention is the graduate-level curriculum of rural development introduced by the University of Bombay. Though this introduction has some novelty, if this becomes just one of the subjects of studies, I do not think, any substantial purpose will be served. There should be a proper mingling of the rural reality and the social and physical sciences on the stable foundation of systematised thinking. In this context the experiment that was started in the University of Bombay four or five years ago and which unfortunately did not make any progress, deserves mention. This experiment was not a part of formal education. On the contrary, graduates from different faculties were involved in this experiment. There was a condition that the young graduates—male or female—must spend at least one year in the rural areas. They were paid some token honorarium for their personal expenses during their stay in the rural areas. These youngsters were given guidance as to what type of work they should do. But the main point of emphasis in this project was that these volunteers should find on their own the social problems and also their solutions. I think, it is quite important that the University does not make such a

programme a part of the formal education programme.

There are multiple advantages that can accrue from such an experiment. We find around us many students who are eager to go to the rural areas. Such an experiment would give them a good opportunity for social work. It is also possible that such type of work produces some new leadership. It can also stimulate new consciousness amongst the rural youths and orient them to the new ideology. The university can make this process more scientific and give it a proper direction. These volunteers can use their knowledge of social sciences while solving the problems of rural development and based on their experience they can also find out the deficiencies in their knowledge. These youths can be given necessary know-how for studying scientifically the social reality. In short, a social laboratory can be developed through this experiment where the university can get facilities for studying different types of subjects.

Once there is a contact with either one particular rural area or many areas, different faculties in the university can take interest in the subject from their own point of view. There is much talk today about inter-disciplinary researches and studies. Because of excessive specialisation, many people complain that it is difficult to get a total view of the social situation and it is also difficult to regard society as one living organic whole. If this deficiency is to be removed, the only alternative is to organise a systematic study by students belonging to different faculties in the university. If the laboratory I have mentioned is made available to the university, inter-disciplinary dialogue will be facilitated. The problems that arise when you try to develop one area in the rural sector are of vital importance and consequently they become all-pervading. The study of all factors such as the geographical features, the natural wealth, the existing technology, the social, economic and political organisations, the administration and particularly the human personalities, could be very fruitful

for different faculties and can bring about an effective inter-disciplinary collaboration.

Starting from the village level upwards, problems can be posed to the university and solutions to these problems can be transmitted from the university back to the village level. If this becomes a reality, university students will not remain away from the challenges of rural life.

The contents of the secondary, higher secondary and collegiate syllabi need to be substantially changed so as to meet our development needs and to give to the students a sense of self-confidence, a direction as to the goals they should pursue and a proper value system. This by itself will not bring about the desired results. A pertinent question is about the motivation of teachers, their competence, their desire to improve their qualifications and teaching ability and their eagerness to identify themselves with the new perspective on education. It is only when the teacher is committed and properly motivated that he can put flesh and blood into the skeleton of a syllabus. We have reduced education to enforcement of regulatory codes, grant-in-aid, pay-scale etc. The entire system has to be shaken up and awakened to the need to identify itself to the stupendous problems of socio-economic development of our country. Gandhiji talked of seven sins. One of them was education without character. Let us ask ourselves a question whether in our far-flung educational endeavour, do we ever give a thought to this paramount question? Time has come when we must take a positive and firm position on this and give a moral direction to our educational effort. (*Excerpts from the convocation address deliver by Prof. Sadanand Varde, Maharashtra Education Minister, at SNDT Women's University*).

Sanskrit Varsity convocation

Professor Ramchandra Narain Dandekar, an eminent educationist delivered the convocation address

at the Sampurnanand Sanskrit Vishwavidyalaya in Varanasi. He said that excessive employment-orientation of educational policy was tending to obscure the true goal of education. The objective of education, particularly of higher education should not be merely training of young people for the available employment opportunities but it should provide the youth an awareness to the needs of the community and their own social obligations. He regretted that idealistic approach towards education was fast disappearing. Educationists were now inclined to speak in commercial terms like investment and dividends. Prof. Dandekar said that education must be prevented from being reduced to a process in which the student was a mere passive constituent.

ICAR invites nominations for Nehru Awards & Hari Om Ashram Awards

The Indian Council of Agricultural Research has invited applications from post-graduate students who have obtained their Ph.D. degree during 1978 in the field of agriculture, animal husbandry and home science for Jawaharlal Nehru Awards for outstanding research in agriculture. The prize of Rs. 5,000/- each will be awarded for projects which may have bearing on finding solution to a national problem in the field of agriculture.

The Council has also invited nominations from agricultural universities / institutions of research and agricultural colleges for Hari Om Ashram Trust Awards of the value of Rs. ten thousand each for outstanding original research leading to results of practical value in the field of agricultural sciences including Fisheries. Scientists engaged in research in the fields of agriculture, forest—farming, social forestry, animal sciences are eligible for the awards.

The Council in Krishi Bhawan, New Delhi-1 will receive applications for both these awards by 31st March, 1979.

Commonwealth Meet on Non-formal Education for Development

Prime Minister, Shri Morarji Desai, inaugurated the Commonwealth Conference on Non-Formal Education for Development recently in New Delhi. He said formal and non-formal methods of education should not merely concentrate on teaching arts and science, but should also imbibe in an individual a sense of purpose to enable him to choose the right path. The Prime Minister referred to the massive programme of non-formal education launched in the country and advised the conference to handle the problems straightaway without involving any controversies.

Dr. Malcolm S. Adiseshiah, Chairman of the conference called for a proper appraisal of the concept of non-formal education with

wealth countries, sixty million were unemployed, underemployed or thinly employed. One hundred fifty million of children are living in conditions of under nourishment, in the International Year of the Child, which makes impossible for them the development of minimum intelligence growth. Dr. Adiseshiah explained that the concept of non-formal education comprehends all learning outside the formal system and had no parameters of time and space. He said non-formal education was a complex concept. It was like development. It was complex in its learning content which had to be improvised for each group of clients. The end products of this system could not be measured by degrees and diplomas. The suc-

Bombay organises inter-university cultural programme

While inaugurating the inter-university cultural festival at Bombay recently, Shri Sadiq Ali, Chancellor of the University said the situation in our country posed a great challenge to youth at the university offering them a chance to steer the nation to its glory. He said it was high time that we had a well-channelled education system which could turnout dynamic young men and women who could contribute to national progress.

Prof. Ram Joshi, Vice-Chancellor of the University in his address called upon the youth to create a new world by their dedicated service since they had capacity and idealism as their greatest assets which could usher in a new era in the country. He hoped the youth festival would be a successful venture with the cooperation of young people who had come from all over the country to exchange ideas.

The five-day festival organised by the Youth of the University drew about seven hundred student delegates from about fourteen universities from different parts of the country. They participated in the wide range of programmes organised as part of the festival. The objective was to bring together university students from all over the country and create an atmosphere of understanding and synthesis. The programme included an all-India Inter-varsity debate and speech, discussions, quiz contest, story and poetry writing, folk dances and other items of fine arts and music.

Madras Varsity course on adult education

The University of Madras has introduced the post-graduate programme in Adult Education leading to award of M.A. Andragogy degree to meet the increasing demand for trained persons in this new area. The course provides an excellent opportunity to students to understand the adult education activities based on the concepts and methods of social sciences

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the poor, the discriminated and the downtrodden organising themselves to end the state of injustice in which they had been living. He said the contribution of non-formal education in the last five years had to be examined and the problems identified. The existing programmes were to be developed and new programmes planned taking advantage of the regional and commonwealth cooperation. Dr. Adiseshiah said that of the nine hundred million persons in the Commonwealth countries, one hundred million lived in the rich countries and eight hundred million in the poor countries. Development means a new international order which will narrow the gap between the living levels of the two groups of countries. The state of inequality which is the root cause of poverty of the majority must end and the poor allowed to develop an adequate standard of living. The Chairman said in less developed Common-

cess of the system depended on the income generation for the five hundred million living below poverty line, employment creation for the sixty million unemployed and provision of protective food for the under-nourished.

Smt. Renuka Devi Barkataki, Minister of State for Education, said literacy, curricula and methods of education should be linked to economic activity. Primary education must be supplemented with continuing opportunities for non-formal education throughout life.

The conference was attended by the representatives from twenty eight Commonwealth countries. The agenda of the conference included problems of rural areas, drop-outs, push outs and left outs of society, the unschooled children of school age, youth and adult illiterates and provision of non-formal education to women.

and to gain a knowledge of practical strategies and skills essential for the programme. It stresses the applied nature of knowledge as related to adult education practices and help the students make the transfer of concepts and methods to adult education programme. The course work is designed to be inter-disciplinary to familiarise the students towards the concepts and methods of different disciplines. The emphasis will be on competence in special areas considered central to adult education, psychology, sociology, anthropology, philosophy, research methodology and mathematics. The optional subjects on management of adult education programmes and instructional product development have also been provided in the course. The course of study for the degree of Master of arts programme in Androgogy will be conducted by the Department of Adult and Continuing Education of the university and shall consist of four semesters.

South Campus complex of Delhi University inaugurated

President N. Sanjiva Reddy laid the foundation stone of the South Campus complex of Delhi University recently in New Delhi. The President said although he was Visitor of the university, he had preferred to keep away from its affairs so that the university could function in a better way. He said that university education had produced doctors and engineers on a large scale who could not be offered employment. The expenditure on institutions which trained persons not required by the nation should be curtailed. He said training in universities and professional institutions was a costly affair and it was a matter of concern that a large number of doctors, engineers and scientists sought employment overseas. He urged the need to devise ways and means of correcting this imbalance and revitalising our educational system. The President said the universities with all their intellectual resources had an important responsibility towards socio-economic change. It should

strive to make its students well equipped and properly motivated citizens who could lead the society to its onward march. The President said the South Campus of the university enjoyed functional autonomy in most of the matters which was conducive to healthy growth of institutions.

Prof. R.C. Mehrotra, Vice-Chancellor of the University said the idea of a multi-campus complex with almost independent and autonomous units of the highest stature interacting closely with one another under the cover of a common university was a novel experiment which Delhi University had introduced.

Seminar on library and information services

The Eighth National Seminar of the Indian Association of Special Libraries and Information Centres held recently in Madras has recommended to the Government to formulate a policy on library and information services. The policy pronouncement and guidelines for implementation supported by adequate resources should be incorporated in the National Five-Year Plan document. The recommendations include setting up of a National Information Centre on rural development to serve as a coordinating agency for integration of existing public library system like NISSAT, integrated library systems in States, effective library legislation and study of actual needs of farmers, artisans and others before evolving information services for the rural community. The seminar has also recommended the standardisation of techniques and procedures for information handling.

Working Group report on media of instruction in universities

The information contained in the report of the Working Group appointed by the University Grants Commission for introduction of regional languages as media of instruction has revealed that eighty-three universities are using regional languages as media of instruction at different levels.

These include honours, post-graduate and professional courses except medical studies. Increasing number of students are now opting for regional languages in their examinations. The percentage varies from sixty to hundred. It is on the lower side in commerce, law and education courses. The universities which permit regional languages as media of examination are also offering instructions through these languages. There are only a few universities where regional languages are used as media of examinations only. Fifty nine universities are permitting the use of regional languages in their examination for honours courses in humanities, forty seven for honours courses in science and fifty two for such courses in commerce. Forty universities are permitting the use of these languages for M.A. examination, thirty for B.Ed. and twenty nine for M.Com.

Judicious use of non-human primates urged

Dr. V. Ramalingaswami, President of Indian National Science Academy and Director, All-India Institute of Medical Sciences, New Delhi, while inaugurating the Seventh World Congress of International Primatological Society held recently in Bangalore pleaded for an integrated policy and a balanced programme in the approach to non-human primates. He emphasized the need to preserve and protect the endangered species. Careful and judicious use of these species should be permitted in studies essential for human welfare and progress. The advancement of knowledge and its application for human good were not to be hampered by unreasonable restriction on use of non-human primates in bio-medical research. Prof. Ramalingaswami said non-human primates constituted a valuable natural resource and a precious heritage of earth. There were about one hundred eighty species of primates existing today. Their study was of utmost importance for a better understanding of biology and evolution. One half of the existing species were in danger of extinction. Dr.

Ramalingaswami attributed this to a variety of factors including excessive commercial exploitation of these resources. He said management and primate husbandry methods were needed to promote their survival in natural ecosystems.

Dr. S. Dhawan, Director of Indian Institute of Science, Bangalore presided.

Colombo workshop on teacher training

The Workshop on in-service teacher education held recently in Colombo under the auspices of World Conference of Organisations of Teaching Profession discussed the main theme of educating teachers for changing role from various angles relevant to the commonwealth countries. The workshop recommended that the programme of teacher education colleges should be reoriented to equip teachers with skills necessary to cope up with existing conditions like high teacher-pupil ratio, shortage of books and equipment and inadequate physical facilities. The need for a structure to incorporate a departmental unit to monitor and evaluate community oriented programmes to sustain enthusiasm, render assistance to teachers and to develop ideas have been suggested. Teachers, educational administrators and supervisors should be exposed to short term orientation programmes to encourage a positive attitude to community involvement and to equip them with necessary skills and ideas to undertake such tasks. Previous involvement in community work and evidence of ability to establish fruitful and effective personal relationship should be regarded as important factors in the selection of teachers. Teacher education institutions should ensure that community education constituted an integral part of in-service programmes. The teachers should also shoulder the responsibility of pre-service teacher education and meet the needs of in-service education, supporting activities in research and development functions. The centres in the field of teaching of science, physical

education and aesthetic education be identified within the region to enable teacher educators to obtain further experience.

The workshop recommended that there should be a broadbased programme for exchange of personnel engaged in in-service teacher education and that funds should be sought from agencies like the UNESCO and the British Council.

National Staff College organises orientation programmes for college Principals

The National Staff College for Educational Planners and Administrators, New Delhi, organised an orientation programme in educational planning and administration recently for a group of college Principals of Gujarat and Madhya Pradesh. Professor Satish Chandra, Chairman of the University Grants Commission who inaugurated the programme highlighted the role played by affiliated colleges in the development of higher education in the country. He said if the educational standards were to be raised, affiliated colleges would have to be considered first. The state governments would have to accept a major responsibility for improving standards as a large part of the plan funds was allocated to them. The scarce resources at the disposal of University Grants Commission would have to be spent carefully so that crucial sectors of higher education did not suffer for want of funds. Professor Satish Chandra suggested to the Principals to establish channels of communication with their communities to procure additional resources for development of the colleges. He also gave an idea for levy of development fee for augmenting the resources of the colleges.

The objectives of the programme were (i) to acquaint the participants with current trends and problems in the field of higher education; (ii) familiarise them with the role of UGC in the development of colleges and the programmes of qualitative improvement of higher education; (iii) promote an awareness of modern

management techniques and their application, conflict management including case study; (iv) enable them to appreciate their role as a change agent in the programmes of institutional planning, faculty improvement, evaluation, internal assessment, student welfare and community services. The programme study was designed after detailed discussions with the education departments of the state governments.

The programme had the benefit of guidance from resource persons which included Dr. S. Shankar Narain and Dr. S.C. Goel, from the University Grants Commission, Professor S. Neelamegan and Professor N.R. Chatterji of the Management Faculty of Delhi University; Professor S. Shukla of Jamia Millia Islamia and Fr. L. Periera from St. Xavier's College, Bombay. In addition to lecture discussions, panel discussions on some of the important theme were also arranged.

The participants had an opportunity of discussing their problems with the officials of the Planning Commission. The group called on the Prime Minister who advised the Principals to introduce a measure of relevance in the curriculum.

The valedictory address of the course was given by Professor Sarup Singh, MP and former Vice-Chancellor of Delhi University.

Kurukshetra completes winter schedule on NSS programme

The NSS unit of Kurukshetra University organised twenty camps under the Youth for Rural Reconstruction campaign during the winter break. About seven hundred students drawn from twenty colleges of the university participated in the camps. Adult education, community and child welfare, welfare of the weaker section of the community and general awareness of the conditions for bank loan facilities were some of the major activities undertaken by the students. These students also assisted the weaker section persons in the villages in constructing their houses for which the material had been pro-

vided by the government. Women students imparted instructions to the village women in the field of local hygiene, stitching, tailoring, embroidery, knitting, food and fruit preservation methods. The women students also worked in the urban slums at some of the places for improvement of local environments. A survey of rural indebtedness among the farm families was also conducted by the girl students. Lectures and discussions on improved agricultural practices, use of insecticides, weed control, cottage and village industries were organised by the students of agricultural colleges. The students prepared sites for two children parks as their contribution towards celebration of International Year of the Child. The village circular road leading to these parks was also levelled and repaired in addition to the earth work done in other villages. Blood donation and mass immunization camps were organised in several villages. Members of the local community were involved in these efforts and cultural programmes were organised as a regular feature of these camps.

Commission on working of Karnataka Universities

A three-member Commission headed by Prof. K.N. Raj has been constituted by the Governor of Karnataka and Chancellor of the State universities to review the working of Bangalore, Mysore and Karnatak universities. The other members on the commission include Prof. C.N.R. Rao of the Indian Institute of Science and Dr. D. Jagannatha Reddy, Director at the Vijaya Hospital, Madras. The Commission would review the working of these universities in all aspects and suggest broad outlines of priorities for their future development. It would recommend measures to be adopted for all-round development of students services including provision of facilities for their curricular and extra-curricular activities, vocational guidance and welfare measures. The Commission will also advise on matters concerning discipline among teachers and other staff.

Indus valley script

Dr. B.K. Chatterjee of Archaeological Survey of India in one of his papers contributed at the 66th Science Congress held in Hyderabad challenged the theory that Indus Valley Civilization had its own script. The latest study of the seals excavated from the sites has revealed that the valley's script was a myth. The foreign and Indian studies hitherto had held that engravings and inscriptions of various animals on the seals were a form of script of Indus Valley people. Dr. Chatterjee said the figures were not script in the true sense but mere representations of animals. The people of the valley were dominated by magical influence and animistic beliefs which were responsible for such engravings. The figures on the seals did not change during the thousand years because the artists producing the seals simply used the forms of human and animal bones.

Re-integration of cultural activities in curriculum

Addressing teacher-trainees under the scheme for propagation of culture among school and college students at the Faculty of Music and Fine Arts of the University of Delhi, Dr. P.C. Chunder, Union Minister for Education, Social Welfare and Culture said that Government was in favour of imparting comprehensive education to the child for his total development. He said that one-fifth of the school time should be devoted to the cultural activities. Dr. Chunder said that a number of important recommendations had been made by the Patel Review Committee which would not only ease the burden of books but also introduce socially useful productive work to end the alienation between the student and community. The Education Minister said that art and culture must form an integral part of our life. Creative activities which essentially flowed from manual work should be encouraged.

One hundred seventeen teachers from various states in the coun-

try participated in the orientation course.

National seminar on engineering education

Shri B D. Jatti, Vice-President in his inaugural address at the national seminar on engineering education held recently in Bangalore called upon the engineering profession to accept the primary responsibility for the world's socio-economic development. He said engineering and science education would have to include many non-technical subjects to cope up with physical as well as biological, social and other forces. The country's objective to eradicate poverty and raise standard of living of the people could be achieved if we were able to translate available knowledge into workable plans. Although the country had made great strides in agriculture and engineering education, it had still a long way to go. The country needed continuous planning to assess the needs of increasing population. The Vice-President said scientists and engineers had a distinct role to play for promoting human welfare and prosperity.

The seminar has recommended that non-formal systems of technical education and training should be developed as the formal education would need enormous resources. Available mass media including radio, newspapers, movies should be harnessed in the proposed non-formal systems. The evaluation systems needed considerable attention when non-formal education became an important component of the system. An independent system should be developed to enable students to display their aptitudes. Evaluation by users should also be encouraged.

The seminar proposed that the apex bodies like the University Grants Commission and All-India Council of Technical Education should get inputs for decision making from centres of policy studies and evaluation studies to be established in universities and industrial associations. The participants felt that goal of engineering education was generation of wealth

with full employment. The basic aim of technical education was to serve the various sectors of economy and contribute to physical quality of life of the people. The technological extension services including the agricultural extension had to form integral part of the educational system.

Surat to organise summer institute in Aquatic Biology

The Bio-Sciences Department of the South Gujarat University, will organise a Summer Institute in Aquatic Biology for the benefit of university and college teachers of Rajasthan, Maharashtra and Gujarat from 1st to 21st March, 1979. The Institute has been sponsored by the University Grants Commission. The main theme of the Institute will be to have an integrated approach to the study of flora and fauna of freshwater, Estuarine and Marine Ecosystems, to impart practical training in preliminaries of freshwater and marine fisheries and to acquaint the participants with all important analytical and field techniques in Aquatic Biology. University and college teachers interested to participate in the Institute may write to the Head of the Department.

Call to promote research in history

Shri Sadiq Ali, Maharashtra Governor while inaugurating the 46th session of Indian Historical Records Commission held recently in Aurangabad said that the commission could do a great deal to promote serious and genuine research in history. He said history writings in this country had laid greater accent on political aspects. The existing records could be used to yield valuable information on occupation, trade, employment and such other socio-economic aspects of history. Shri Sadiq Ali observed that in response to the needs of modern intellectual life, some excellent history books on India had been written in the recent past. Writing history required a sense of dedication, patience, a certain moral and intellectual equipment

and a conviction towards facts. He said that patriotism should be strong enough to accept the past as it was with all its good and evil. There was much in the country's cultural heritage to be proud of. All great religions had found a hospitable home in India enriching the cultural life. This offered our historians a fruitful field for research. It was however well to cherish critical methods in historical writings. The Governor said while history written in the right spirit could do immense good, it could do incalculable harm if there was a narrow sectarian approach.

Dr. P. C. Chunder, Union Education Minister said in his presidential address that draft on public archives was under consideration of the central government. He said historical records had to be made available to the scholars knowing various scripts. Dr. Chunder stressed the need for giving serious attention to the special designing of buildings for preserving historical records.

Plea for study in atomic energy programmes

Dr. H. N. Sethna, Chairman of the Atomic Energy Commission while delivering the lecture on self-reliance in nuclear fuel and instrumentation at Osmania University, as part of its diamond jubilee celebrations, called upon the youth in universities to avail of the opportunities in the field of atomic energy programmes. He said this was the best way to exploit their talent and resources in a meaningful way. He advised the youth to become builders and entrepreneurs rather than dependants and mere employees. Dr. Sethna said that we had reached a position in the programme of atomic energy where the whole gamut of operations was carried out by ourselves. The nuclear programme for India was most ambitious which would offer more opportunities for self-employment to talented and resourceful scholars. Dr. Sethna said there was obviously a need to have our own research and development establishments and scientific personnel. This course was followed in the initial years by setting up a chain of labora-

tories under the CSIR. The nuclear effort had given a definite direction to the scientific and technological aspirations of our people.

Gauhati to conduct degree examination from question banks

The Gauhati University has decided that questions for 1980 degree examination will be set from the question banks formulated in the subjects of English, History, Sanskrit, Hindi, Philosophy, Anthropology, Botany, Physics, Commerce and Economics. The question banks booklets for these subjects have been made available for sale. The programme is likely to be extended to other subjects in a phased manner.

National games

The steering committee of the 25th National Games which met in Hyderabad recently under the chairmanship of Mr. G. Rajaram, Andhra Pradesh Sports Minister, approved the games schedule. The games are scheduled to be held from 14th to 24th February. About six thousand sportsmen from all over the country are expected to participate in the games. The state government has decided to close about forty educational institutions to accommodate the participants. The Union Education Ministry has instructed the State Sports Council to meet the transport and other expenses of the various contingents. The Railway Ministry will provide special bogies for easy transport of the sportsmen. The special feature of the games will be the torch relay from the historic Charminar to Fateh Maidan covering a distance of thirty-five kilometers. Olympians, Arjuna Award winners will carry the torch.

Medical Varsity for Andhra

Dr. M. Channa Reddy, Andhra Pradesh Chief Minister said in Hyderabad recently that the State Government would appoint a committee to examine the proposals relating to starting of a medical university, imposition of

medical cess, provision of employment opportunities to all medical graduates and extension of medical care to every citizen in the State. The committee would submit its report in three months and the Government would implement its recommendations within the shortest possible time. The Chief Minister said that the government was interested in starting a medical institute like the All India Institute of Medical Sciences in the State. The proposed university will integrate various system of Indian medicine.

Seminar on methodology in teaching and examination

The seminar on 'Improvement of methodology in teaching and examination' recently held in Patna has recommended that there should be at least one hundred eighty teaching days in the colleges excluding Sundays and holidays. It was suggested that number of seminars, tutorials should be increased and students be encouraged to participate in these programmes actively. Teaching aids like overhead projectors and slides should be used frequently. Dr. Ramji Singh of Patna Training College who initiated the discussion suggested drastic reforms in examination system. The grade system of assessment was recommended and it was suggested that internal assessment in tutorials and terminal examinations should form part of the final examinations. The participants stressed the need for regular conduct of examinations. It was suggested that use of Question Banks should be made to avoid students complaints.

Dravidian linguists conference

The Department of English of Calicut University will organise the ninth all-India Conference of Dravidian Linguists from May 24 to 26 at the University Centre at Tellicherry. The three-day conference will afford opportunities to scholars in Dravidian studies to take stock of the state of art in Dravidian studies. Eminent scholars from abroad are also expected to participate in the conference.

Participants may obtain the details from the Organising Secretary of the conference at University Centre, Tellicherry-670101.

National seminar on literature

Mysore University would organise a three-day national seminar on Epics in Indian Literature to commemorate the fiftieth year of the Kannada postgraduate department. Scholars of more than fifteen languages are expected to participate in the seminar. The President of the Karnataka Sahitya Academy, Dr. M. Shivararam, said in Bangalore that the Academy would conduct state and district level seminars to propagate Kannada and develop contacts with other academies for promotion of regional languages.

Jnanpith Award

Eminent Hindi poet and novelist Dr. S.H. Vatsyayan 'Ageya' has been selected for the Jnanpith literary award for 1978. He has won the award for his collection of poems 'Kitni Navon Man Kitni Bar'. The published works of Dr. Vatsyayan include huge collections of poems, short stories, novels, books on literary criticism, several travelogues and a play. His literary output has been found varied and distinctly significant.

HAU adopts a village

While presiding over the function to mark the occasion of adoption of the village, 'Kirtan' by the Haryana Agricultural University for transference of agricultural technology and research, Dr. P.S. Lamba, Vice-Chancellor said the university planned to adopt more villages to promote scientific farming. He urged the farm scientists to involve children and women in their programmes.

A Progressive Farmers Dal has been formed to keep the farm community in constant touch with the university. The main objective of the village adoption programme is to make farmers aware of modern aspects of agriculture and cattle breeding.

Punjabi institutes awards for good teaching

The Syndicate of the Punjabi University at its recent meeting held under the chairmanship of Dr. Amrik Singh, Vice-Chancellor decided to institute five awards for good teaching in various faculties of the university. An equal number of awards have been instituted for colleges affiliated to the university.

BHOPAL UNIVERSITY Advertisement

(continued from page 84)

The requirement regarding minimum percentage of marks shall be relaxed upto 5% in case of Scheduled Caste/Scheduled Tribes candidates.

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M.G. Paithankar
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Psychology

1. Chattopadhyay, Sukumar. Construction of psychological test for selecting the student nurses. University of Calcutta.
2. Nirpharake, Ashok Madhavrao. An experimental study of some methods of training in creativity. University of Poona.

Sociology

1. Bambawale, Usha Hemant. Inter-religious marriages: A sociological study. University of Poona.
2. Mishra, Manju. Vindhya Pradesh mein jansankhya ke samajik pravritiyan (Hindi). Awadhesh Pratap Singh University.
3. Sharma, Bharati. Impact of culture on the pattern of personality in two Indian tribes—Khasi and Naga. University of Gauhati.

Political Science

1. Dattagupta, Bela. Investigation de Recherches, Oublie's: A socio-historical study of the rise of sociology in India in the nineteenth century with reference to Bengal. D. Litt. University of Calcutta.
2. Gupta, Rakesh Kumar. Peasant struggles: A case study of Bihar. Jawaharlal Nehru University.
3. Pramool, Sansupa Phramaha. Religion and state in the political life of Thailand. University of Poona.
4. Rajalakshmi, V. Board of revenue in Tamil Nadu: A case study. Karnatak University.
5. Ramchander Rao, Kilaru. Impact of United States policy to Pakistan on Indian-American relations, 1953-61. University of Poona.
6. Shukla, Braj Gopal. Socialist movement in Baghelkhand. Awadhesh Pratap Singh University.
7. Tiwari, Naresh Kumar. Political development in Nepal: A study. Jiwaji University.

Economics

1. Bal, Harbhajan Singh. New farm technology and income distribution of Punjab farmers. Punjabi University.
2. Gandhi Babu, Veluri. Consumption patterns in agriculturally progressive areas: A case study of East godavari District, Andhra Pradesh. Andhra University.
3. Hadap, Govind Nilkanthrao. Study of trade unions in ginning and pressing factories and cotton textile industry in Vidarbha. Nagpur University.
4. Narayana, N. A study of structural change in the economic development of India (1951-1971) with special reference to industry. Sri Venkateswara University.
5. Patel, Navneet. Madhya Pradesh mein sthaniya vit: Nagar Nigamon ke gahan vitiya adhyayan ke vishesh sandarbh mein, 1956-74. (Hindi). University of Indore.
6. Prasad, U.S. Financing and management of retail stores in urban areas of Madhya Pradesh. Bhopal University.
7. Sikarwar, Ramesh Singh. Demographic factors in economic growth with special reference to Gwalior Division. Jiwaji University.
8. Sinha, Pramod Kumar. Social security measures in India since independence. University of Bihar.

Education

1. Deshpande, Suresh Hariharrao. A critical study of the programme of physical education in ancient India. Nagpur University.
2. Desouza, Francisco Lousis Jose. Planning school education in Goa. M.S. University of Baroda.
3. Govindarajacharyulu, S.T.V. A study of the relationship among creative thinking, intelligence and school achievement. Utkal University.
4. Kalra, Vijay. A study of moral judgement in children

belonging to different mental and socio-economic levels. Jamia Millia Islamia.

5. Mascarenhas, Manuel. A critical survey of examination reforms undertaken by the Maharashtra State Board of Secondary Education with special reference to the question papers set in higher level English and in Geography (Special Geography and Geography in Social Studies). University of Poona.

6. Patel, Surabhi Prafullabhai. Educational opportunity for children of urban slums in Delhi. M.S. University of Baroda.

7. Rama, R. An Investigation into the dynamics of student activism among the degree colleges of coastal Andhra Pradesh. Andhra University.

Commerce

1. Girdhari, Dinkar Ganpatrao. Pattern of rural credit with special reference to beed. Marathwada University.
2. Kamath, M.V. Profit improvement in engineering industry through the use of financial techniques. Karnatak University.
3. Kolte, Sharad Bhaskarrao. Prices and profits in the pharmaceutical industry: A study. University of Poona.
4. Nadkarni, G.A. Investment appraisal in industrial undertakings. Karnatak University.
5. Phegade, Gopal Damoder. Sick cotton textile mills in Maharashtra with special reference to Khandesh Region. University of Poona.

Management

1. Dalal, A.K. Expected job attractiveness and satisfaction as information integration. Indian Institute of Technology, Kanpur.
2. Sood, Surinder Kumar. Administration of benefits under the Employee's State Insurance Scheme. University of Poona.

HUMANITIES

Philosophy

1. Bhelke, Subhashchandra Eknath. Concepts of will and obligation in the philosophical thought of Jean Jacques Rousseau. University of Poona.
2. Gupta, Ram Das Prasad. A critical study of humanism in Indian Philosophy with special reference to Buddhism. University of Bihar.
3. Kundu, Yashodhara. Hindu marriage institution: A philosophical study. University of Poona.
4. Sai Babu, A. A study of Sri Aurobindo's philosophy of education. Sri Venkateswara University.

Religion

1. Dass, Ayodhya Chander. A critical study of the solar deities of the Rigveda in historical perspectives. Punjabi University.

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English

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2. Sant Singh. George Orwell and the ethical imagination. Punjabi University.

Sanskrit

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2. Jani, Himmatram Mahashankar Yajnik. Vedang jyotishyasamik shivavrutti vivechnatamakam adhyayanam. M.S. University of Baroda.
3. Pande, Madhaorao Prakash. Literary aspects of Bhavabhuti. Nagpur University.

Hindi

1. Abdul Karim, M. A comparative study of novels of Premchand and Thakazhi. University of Kerala.
2. Balakrishnan Chettiar, J. Social content in the Santa kavya. University of Kerala.
3. Chamoli, Chander Mohan. Beesvni shatabdi ke khand kavya aur unka shastriya vivechan. Meerut University.
4. Gulgule, Narhari Rajaram. Surdas aur Tulsidas ke kavya mein upmanyojana. University of Poona.
5. Misra, Ashokkumar Shivrinarain. Bhaktikal ke premakhyanak kavyon ka sanskritik anushilan, 1450 A.D.—1650 A.D. M.S. University of Baroda.
6. Sharma, Trilokinath Gangaprasad. Hindi atmakatha sahitya ka alochanatmak adhyayan. M.S. University of Baroda.
7. Tomar, Sushila Devi. A stylistic study of Jainendra's novels. University of Udaipur.
8. Vairagi, Laxmi Lal. A stylistic study of the work of Hazari Prasad Dwivedi. University of Udaipur.

Assamese

1. Dutta Baruah, Phanindera Narayan. A comparative analysis of the morphological aspects of Assamese and Oriya. University of Gauhati.

Tamil

1. Boopathy, S. A comparative phonemic study of Tamil and Bengali. University of Calcutta.

2. Jaya, P. Works of Citters and their place in Hindu religious thought in Tamil literature. University of Kerala.

3. Thayammal, B. Child in Tamil poetry: A study upto 15th century A.D. University of Kerala.

Telugu

1. Rajeswari, D. Sanskrit drama in the form of Telugu prabandhas. Bangalore University.

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1. Imrapur, S.G. Critical study of janapad ogatugalu. Karnatak University.
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1. Indiradevi, Singaswamy. Growth and development of Visakhapatnam city and its region: A spatial analysis. Andhra University.
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1. Bhatt, Madanlal Chhaganlal. Administrative system of Suba-Berar under the Asaf-Jahi dynasty of Hyderabad, 1724 to 1853 A.D. Nagpur University.
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&

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POST OF SECRETARY GENERAL

The Council of the Association invites applications from graduates, preferably with experience of academic and administrative work in the Commonwealth, for appointment as successor to Sir Hugh Springer, K.C.M.G., who retires in September 1980. The members of the Association are universities of the Commonwealth and the Secretary General's duties will include visits to and contact with university institutions in the Commonwealth. The Association's headquarters are situated at 36 Gordon Square, London, W.C.I.

Annual salary subject to negotiation, but not less than £20,000. Superannuation available under U.S.S. (or existing F.S.S.U.) arrangements. Assistance with housing, entertainment, car and removal expenses is possible.

Further particulars of the post are available from the Chairman of the Association, Dr. J. Steven Watson, Principal of the University of St. Andrews (College Gate, North Street, St. Andrews, Scotland KY16 9AJ) with whom applications should be lodged by 31 March, 1979.

ALIGARH MUSLIM UNIVERSITY ALIGARH-202001

Advertisement No. 30/78-79

Applications, on the prescribed form are invited for the following posts:

Candidates must possess a Medical qualifications included in the first or second schedule or Part II of the third schedule (other than licentiate qualifications) of the Indian Medical Council Act, 1956. Holders of the educational qualifications included in Part II of the third schedule should fulfil the conditions stipulated in Section 13(3) of the Indian Medical Council Act, 1956. Must possess a basic University or equivalent qualification entered in schedules under State/Central Medical Registration Act. (For the post at S. No. 1).

1. Reader in Ocular Biochemistry, Department of Ophthalmology. Scale Rs. 1200-50-1300-60-1900 plus allowances.

Qualifications

M.D. (Biochemistry), M.Sc. (Biochemistry), Ph.D. (Biochemistry), D.Sc. (Biochemistry).

Experience

As Assistant Professor/Lecturer in Biochemistry for three years in Medical College.

Desirable

Ph.D. guidance and research work in Ocular Biochemistry.

2. Reader in Political Science—Plan Post (International Organisation). Scale Rs. 1200-50-1300-60-1900 plus allowances.

Qualifications ordinarily required

(a) A first or high second class Master's Degree in the subject concerned of an Indian University or an equivalent foreign qualification; (b) A research degree of a doctorate standard or published work of a high standard; and (c) At least five years experience of teaching Postgraduate Classes and some

experience of guiding research.

3. Reader in Political Science—Plan Post, Women's College. Scale Rs. 1200-50-1300-60-1900 plus allowances.

Qualifications ordinarily required

(a) A first or a high second class Master's Degree in the subject concerned of an Indian University or an equivalent foreign qualification; (b) A research degree of a doctorate standard or published work of a high standard; and (c) At least five years teaching experience of Postgraduate classes and/or five years teaching experience of undergraduate classes.

4. Lecturer in Civil Engineering (Temporary) University Polytechnic, Scale Rs. 700-40-1100-50-1600 plus allowances.

Qualifications

Ordinarily at least a Second Class Bachelor's Degree in Civil Engg. or its equivalent.

Prescribed application forms and instructions may be had from the Deputy Registrar (Executive) either personally or by sending a self-addressed envelope of 23 x 10 cm. Last date for receipt of applications is 17th February 1979. Incomplete applications and those received late may not be considered.

Higher initial start may be given to candidates possessing exceptional qualifications and experience. Candidates interviewed may be paid contribution towards their T.A. equal to one single second class railway fare only.

Jamalur Rahman
REGISTRAR

THE UNIVERSITY OF BURDWAN RAJBATI : BURDWAN West Bengal

Advertisement No. 11/78-79

Dated, 16 January, 1979

Applications in the prescribed form are invited for the following posts in

the approved scales of pay (viz. Reader Rs. 1200-50-1300-60-1900/- and Workshop Instructor Rs. 500-25-600-30-840-35-875/-) with allowances and other benefits according to University Rules.

A. Department of Philosophy

(i) Reader—One post

B. Department of History

(i) Reader—One post

C. Department of Law

(i) Reader—Two posts

D. Department of Library Science

(i) Workshop Instructor—One post

Minimum Qualifications for Posts of Readers (A, B & C)

(a) A Doctor's Degree or published research work of an equally high standard and

(b) Consistently good academic record with first or high second class (B in the seven point scale) Master's Degree in the relevant subjects or an equivalent degree of a foreign university.

Desirable Qualifications: Specialisation or Proficiency

For A: Analytical Philosophy/Indian Philosophy

For B: Mediaeval Indian History

For C: Administrative Law/Taxation Law/Interpretation of Statutes and Principles of Legislation/Constitutional Law/Legal Remedies/Commercial Laws and/or any branch of procedural Laws.

For D: Minimum Qualifications for Workshop Instructor

(a) M.Lib.Sc. or an equivalent degree of a recognised University or Institution;

(b) At least three years' experience of Library work.

The University Council may on recommendations of the appropriate Selection Committee, waive any of the requirements in view of the candidate's specialised knowledge in the subject. The choice of the Committee may not necessarily be confined to those who apply formally.

For application form and other information apply to the Registrar with a self-addressed stamped (0.40p.) envelope (9" x 4").

Last date for submission of application with the requisite fee of Rs. 5/- is 15 February, 1979.

A. K. Chaudhuri
REGISTRAR

HIMACHAL PRADESH UNIVERSITY SIMLA-171005

Advertisement No. 1/79

CORRIGENDUM

Please treat the specialisations mentioned against posts of Professor/Associate Professor in Physics, Associate Professor in English and Assistant Professor of Sanskrit as deleted.

Dr. K. D. Gupta
REGISTRAR

accompanied by
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Higher Secondary/Intermediate/
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and

(C) (i) In the case of Professors the
 experience of teaching of post-
 graduate classes shall be at least
 10 years and, in the case of
 Readers the experience of teach-
 ing post-graduate classes shall be
 at least 5 years; and

(ii) In the case of Professors evi-
 dence of candidate/s having been
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 under his supervision and in the
 case of Reader at least three
 years experience of guiding re-
 search.

Provided that if the Selection Com-
 mittee is of the view that the research
 work of a candidate as evident either
 from his thesis or from his published
 research work is of very high standard,
 it may relax any of the qualifications
 prescribed in (b) above.

N.B. The requirement regarding mini-
 mum percentage of marks shall
 be relaxed upto 5% in case of
 scheduled castes/scheduled tribes
 candidates.

Qualifications for Lecturers

A (a) (i) A Doctor's degree or publish-
 ed research work of an equi-
 valent high standard; and

(b) (i) A 2nd class Master's degree
 in a relevant subject with at
 least 50% marks (B in the
 seven point scale) or an equi-
 valent degree of a foreign
 University; and

N.B. (While taking into account the
 marks/grade, the marks/grade
 obtained in internal assessment,
 if any, shall be excluded).

(ii) At least 50% marks at the
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(iii) At least 50% marks at the
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Number of Posts in each Subject

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Qualifications may be relaxed in case
of experienced candidates.

6. Senior Lab. Assistant (Pathology),
University Health Service, Scale
Rs. 380-12-500-EB-15-560 plus
allowances

Qualifications

Must have passed the Higher Secondary or its equivalent examination with Science subjects with previous experience in a Pathology Laboratory.

Desirable

Diploma in Medical Lab. Technology (Pathology) with previous experience.

7. Electrician, Building Department,
Scale Rs. 330-10-380-EB-12-500-
EB-15-560 plus allowances

Qualifications

High School/I.T.I. Electrician Trade Diploma. 5 years experience or an applicant with lesser qualifications will be eligible with 10 years experience.

Job requirement

Repairs and maintenance of Electrical Motors, Starters and other Installation work require competency in writing.

Note

Qualifications may be relaxed in case of experienced candidates.

Prescribed application forms and instructions may be had from the Deputy Registrar (Executive) either personally or by sending a self-addressed envelope of 23x10 cm. Last date for receipt of applications is 20.2.1979. Incomplete applications and those received late may not be considered.

Higher initial start may be given to candidates possessing exceptional qualifications and experience. Candidates interviewed may be paid contribution towards their T.A. equal to one single Second Class Railway fare only.

Jamalur Rahman
REGISTRAR

INDIAN INSTITUTE OF TECHNOLOGY, KANPUR KANPUR-208016

Advertisement No. 1/79

Applications are invited for any one of the following posts in the Games & Physical Education Department of the Institute:

(i) Physical Training Instructor GR.I:

(2) Preference v
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BHOPAL UNIVERSITY BHOPAL

Advertisement No. 1/79

Applications are invited for the following posts in the scales shown against each with benefits of Dearness Allowance, Contributory Provident Fund and other allowances as may be admissible under the University rules.

Pay Scales

1. Professor—Rs. 1300-50-1500-75-1800-100-2000.
2. Reader—Rs. 1100-50-1600.
3. Lecturer—Rs. 620-40-900-50-1400.

Qualifications for the Posts of Professors and Readers

(a) A Doctor's Degree or published work of an equivalent high standard;

(b) (i) A IIInd class Master's Degree in a relevant subject with atleast 50% marks (B in the seven point scale) or an equivalent Degree of a Foreign University.

N.B. (while taking into account the marks/grade, the marks/grade obtained in internal assessment, if any, shall be excluded.)

(ii) Atleast 50% marks at the Bachelor's Degree examination on the basis of which division is awarded at the Degree level by the University

(iii) Atleast 50% marks at the Higher Secondary/Intermediate / Pre - University Examination, as the case may be.

and
(c) (i) In the case of Professors the experience of Teaching of Post-Graduate Classes shall be atleast 10 years and in the case of Readers the experience of Teaching Post-graduate Classes shall be atleast 5 years; and

(ii) In case of Professors evidence of candidates having been awarded a Doctor's Degree under his supervision and in the case of Reader atleast three years experience of guiding research.

Provided that if the Selection Committee is of the view that the research work of a candidate as evident either from his thesis or from his published research work is of very high standard, it may relax any of the qualifications prescribed in (b) above.

Qualifications for the Post of Lecturer

A. (a) A Doctor's Degree or published research work of an equivalent high standard.

(b) (i) A IIInd Class Master's Degree in a relevant subject with atleast 50% marks (B in the seven point scale) or an equivalent Degree of a Foreign University; and

N.B. (While taking into account the marks/grade,

the marks/grade obtained in internal assessment, if any, shall be excluded);

(ii) Should either have an average of 55% marks of two examinations prior to Master's Degree (irrespective of the marks obtained in any of the two examinations) or 50% marks in each of the two examinations separately.

Provided that if the Selection Committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard, it may relax any of the qualifications prescribed in (b) above.

Provided further that if a candidate possessing a Doctor's Degree or equivalent research work is not available or is not considered suitable, a person possessing the following qualifications may be recruited.

B. (i) A IIInd Class Master's Degree in a relevant subject with atleast 50% marks (B in the seven point scale); and

N.B. (While taking into account the marks/grade, the marks/grade obtained in internal assessment, if any, shall be excluded).

(ii) two year's experience of research work or practical experience in research Laboratory / research organization; and

(iii) should either have an average of 55% marks of the two examinations prior to Master's Degree (irrespective of the marks obtained in any of the two examinations) or 50% marks of the two examinations separately.

or

C. (i) A Master's Degree with 1st Class or Grade 'A' in a relevant subject, and

(ii) should either have an average of 55% marks of the two examinations prior to Master's Degree (irrespective of the marks obtained in any of the two examinations) or 50% marks in each of the two examinations separately.

Provided further that in the case of categories (B) and (C), a candidate will have to obtain a Doctor's Degree/ M.Phil Degree or have to his credit published research work of equivalent standard within 5 years of his appointment failing which he will not earn future increments until he fulfils these requirements.

NO. OF POSTS IN EACH SUBJECT AND DEPARTMENT

Post	Deptt.	No. of posts	Relevant subject in which Master's Degree is required	Specialization
Professor	Comparative Languages and Culture	1	Modern Persian/ Arabic/Sanskrit/ Pali and Prakrit	Comparative Philology Linguistics Comparative Culture
Professor	—	1	Geology	
Professor	—	1	Physics	
Professor	—	1	Commerce	
Professor	—	1	Sociology	
Professor	—	1	Psychology	
Professor	—	1	Law	
Reader	Comparative Languages and Culture	2 (one for Persian & one for Arabic)	Modern Persian/ Arabic	
Reader	Bio-Science	1	Bio-Chemistry/ Botany/Zoology/ Life Science/ Physics (Electronics)	Bio-Chemistry Ecology Instrumentation Fisheries Limnology and Plant Physiology Plant Growth and development with reference to growth regulations.
Lecturer	Comparative Languages & Culture	2 (one for Arabic & one for Persian)	Modern Persian/ Arabic. —	
Lecturer	Regional Planning & Economic Growth	1	Economics	Regional Economics Economic Growth Quantitative Economics.

(Continued on page 77)

THE UNIVERSITY OF BURDWAN

RAJBATI : BURDWAN
WEST BENGAL

Advertisement No. 9/78-79
Dated 11th January, 1979

Applications in the prescribed form are invited for the following posts in the approved scales of pay viz Professor—Rs. 1500-60-1800-100-2000-125/2-2500/-, Reader—Rs. 1200-50-1300-60-1900/- and Lecturer—Rs. 700-40-1100-50-1600/- with allowances and other benefits according to University Rules.

A. Department of Mathematics

- (i) Professor of Statistics—One post
- (ii) Reader in Statistics—One post

B. Department of Political Science

- (i) Reader—One post

C. Department of Foreign Languages

- (i) Lecturer in French—One post
- (ii) Lecturer in Russian—One post

D. Department of Commerce

- (i) Lecturer—One post

Minimum Qualifications

1. (a) A Doctor's Degree or published research work of an equally high standard; and
- (b) Consistently good academic record with first or high second class (B in seven point scale) Master's Degree in the relevant subjects or an equivalent degree of a foreign University.

2. Additional Requirements

For Professorship

- (i) At least ten years' teaching experience in Postgraduate class;
- (ii) Competence to plan and supervise Research Project;
- (iii) Publication of sufficient merit.

Desirable Qualification

Specialisation or Proficiency

For A (i) & (ii)

Mathematical Statistics/Multivariate Analysis/Econometrics / Industrial Statistics/Biostatistics.

For B

Advanced Political Theory/Indian Politics / Political Sociology / Local Government in India.

For C (i) & (ii)

Specially qualified to teach French or Russian Languages.

For D

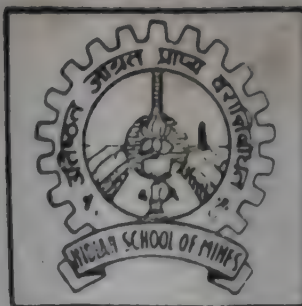
Industrial Psychology/Labour and Industrial Relations/Manpower Planning & Management of Human resources/Labour Laws.

The University Council may, on recommendation of the appropriate Selection Committee, waive any of the requirements in view of the candidate's specialised knowledge in the subject. The choice of the Committee may not necessarily be confined to those who apply formally. Those who applied earlier for the posts under "D" need not apply again.

For application form and other information apply to the Registrar with a self-addressed stamped (0.40p.) envelope (9" x 4").

Last date for submission of applications with the requisite fee of Rs. 5/- is 7th February, 1979.

A. K. Chaudhuri
REGISTRAR



Indian school of Mines

DHANBAD

Advt. No. 420001/79

January 18, 1979

I. Indian School of Mines—a 'deemed University' under the UGC Act 1956, invites applications for the following faculty positions :

1. **Three Professors** (Pay scale Rs. 1500-2500; Upper age limit 50 years) (a) one in Electronics and (b) one in Instrumentation—both for the Deptt of Electronics & Instrumentation and (c) one in Tunneling and Shaft Sinking in the Deptt of Min Engg.

The post at (a) is a V Plan vacancy, likely to become permanent, the post at (b) is an Electronics Commission Project vacancy, also likely to become permanent, and the post at (c) is for the 'Indian Explosives' Chair—for a 3-year period.

2. **Three Assistant Professors** (Pay scale Rs. 1200-1900; Upper age limit 40 years) : (a) one in Mining Machinery for the Deptt of Engg and Mining Machinery; (b) one for Mineral Engg/Coal preparation for the Deptt of Chemistry, Fuel & Metallurgy, and (c) one in Management (with specialisation in Organisation Development) for the Deptt of Industrial Engg and Management.

The post at (a) is in a temporary vacancy, till April 1981, the post at (b) is a lien vacancy, likely to become permanent, and the post at (c) is against the NMDC Chair—for a 2-year period.

3. **Eight Lecturers** (Pay scale Rs. 700-1600; Upper age limit 35 years); (a) one in Elec Engg and (b) two in Mech Engg for the Deptt of Engg & Mining Machinery; (c) one Electronic Engineer/Lecturer for the Deptt of Electronics and Instrumentation, (d) one in Mine Surveying for the Deptt of Mining Engg, (e) one in Economics and (f) two in Industrial Engg—both for the Deptt of Industrial Engg and Management.

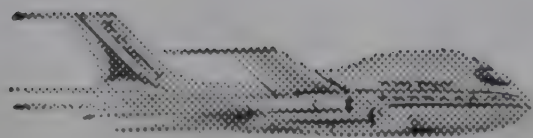
All posts of Lecturers are V Plan vacancies, likely to become permanent.

II. Specialising in the field of earth sciences and mineral technology, Indian School of Mines conducts three B Tech programmes (in Mining Engg, Mining Machinery, and Petroleum Engg), two M.Sc programmes (in Applied Geology and Applied Geophysics) as well as several industry-oriented post-graduate programmes, including M Tech programmes in Mining and Mine Planning/Open Cast Mining Mining Machinery/Drilling Engg/Mineral Exploration/Engg Geology/Mining Geophysics/Mineral Engg/Fuel Engg/Industrial Engg & Management. Two additional M Tech programmes (in Pet Engg and Pet Production) are expected to be started during the current year. Two Advanced Diploma courses, one in Mine Surveying and the other (run with Electronics Commission support) in Mining Electronics and Communication, are also offered.

The School also has an ambitious continuing-education/executive development programme (covering about 20 courses per year), a strong R & D activity and an approved scheme of institutional consultancy.

III. Detailed information-for-candidates and prescribed application forms are obtainable from the office of Registrar, Indian School of Mines, Dhanbad-826004, on sending a self-addressed envelope (of the size 29 cm x 12 cm) affixed with postal stamps of the value of Rs. 3.25 paise. Application in the prescribed application form, complete in all respects should reach the undersigned on or before 24th February 1979. Those in service are advised to apply through their employer(s).

S. P. VARMA
REGISTRAR



Returning
on our fast,
non-stop flights
can be a delightful treat. You get
more time in London, or arrive
home earlier. Twice a week from
London to Delhi, and then to
Bombay. And twice a week from
London direct to Bombay.
Delectable food, super service. Maybe
you'll wish it would go on a little longer.

AIR-INDIA

Something good going for you.

**Catch my
non-stop London-Return.
Four times a week.**

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University news

A FORTNIGHTLY CHRONICLE OF HIGHER EDUCATION & RESEARCH FEBRUARY 15, 1979



Vice-President Shri B. D. Jatti, Dr. H. K. Jain, Director, Indian Agricultural Research Institute and former Director Dr. B. P. Pal at the Convocation of the Institute held recently in New Delhi.

LUCKNOW UNIVERSITY LUCKNOW

Advertisement No. 2/1979

Applications are invited for the following posts

Readers in the grade of Rs 1200-50-1300-60-1900

1. Two temporary Readers in Hindi (likely to be made permanent)
2. One temporary Reader in Psychology (likely to be made permanent)
3. One temporary Reader in Commerce (likely to be made permanent)
4. One Reader in Urdu.

Qualifications

Essential—1 (a) A doctorate in the subject of study concerned or a published work of a high standard in the subject; and

(b) Consistently good academic record (that is to say, the overall record of all assessments throughout the academic career of a candidate) with first or high second class (that is to say with an aggregate of more than 54% marks) Master's Degree in the subject concerned or equivalent degree of a foreign University in such subject.

Where the Selection Committee is of the opinion that the research work of a candidate, as evidenced either by his thesis or by his published work is of a very high standard, it may relax any of the qualifications specified in sub-clause (b) of clause 1.

2. Experience of teaching honours/post-graduate classes for not less than five years and published research work of high standard in the subject.

Preferential—Experience of teaching post-graduate classes and guiding research.

Lecturers in the grade of Rs 700-40-1100-50-1600

5. One Lecturer in German
6. One Lecturer in Chinese
7. One temp. Lecturer in Persian (likely to be made permanent)
8. One temp. Lecturer in Arabic for teaching Modern Arabic Course.
9. One temp. Lecturer in Western History for teaching History & Culture of Asian People.

Qualifications

Essential—1 (a). A doctorate in the subject of study concerned or a published work of a very high standard in that subject, and

(b) Consistently good academic record (that is to say, the overall record of all assessments throughout the academic career of a candidate) with first class or high second class (that is to say, with an aggregate of more than 54% marks) Master's degree in the subject concerned or equivalent degree of a foreign University in such subject.

Where the Selection Committee is of the opinion that the research work of a candidate, as evidenced either by his thesis or by his published work is of a

very high standard, it may relax any of qualifications specified in sub-clause (b) supra.

Preferential—Experience of teaching degree/honours/post-graduate classes for two years.

10. Three temp. Lecturers in Education (likely to be made permanent)

Qualifications

Essential—A First or high second class (that is to say, with an aggregate of more than 54% marks) Master's Degree in the subject or an equivalent degree of a foreign University in the subject with a good academic record.

Preferential—A doctorate in the subject, advanced studies and published work, experience of teaching degree, honours or post-graduate classes for two years.

General

For purposes of qualifications required for the above posts, the Degree obtained in a subject taught in a Department which is subsequently constituted into separate Departments, shall be deemed to be degree in the subject concerned for the newly constituted Departments.

Benefits of Provident Fund available as admissible under the rules on confirmation for permanent posts. Period of probation for permanent posts in one year. It is not necessary to fill any/all of the advertised posts.

For the posts of Lecturers, other things being equal preference will be given to Scheduled Castes/Tribes candidates, who are considered fit. Such candidates should indicate in their applications that they belong to Scheduled Castes/Tribes, attaching certificate from the District Magistrate of the District to which they belong. No other certificate for this purpose will be entertained. In case of Scheduled Castes/Scheduled Tribes candidates interviewed by the Selection Committee if suitable candidates are not available for appointment to the posts of Lecturer, the Selection Committee may recommend appointment of suitable candidate as Research Associate in the scale of Rs 700-1300 for a period upto three years and these persons could later compete for the posts of Lecturers as and when vacancies occur.

Applications on the prescribed form (available on request accompanied with a self-addressed envelope of size 23 cm x 10 cm, free of cost, from the office of the Registrar) with recent testimonials, publications etc. should reach the Registrar, Lucknow University, by **Saturday, Feb. 24, 1979**. The candidates who are in service, must send their applications through proper channel. Application Forms to outstation candidates will be issued by post upto Saturday, February 17, 1979.

B.N. Singh
REGISTRAR

HARYANA AGRICULTURAL UNIVERSITY HISSAR

Advertisement No. 2/79

Applications invited for the following posts. Higher start outstanding qualifications, experience and achievements. Benefits of Contributory Provident Fund and leave etc. according to University Rules. Applications of the candidates already in service must reach through proper channel upto the fixed date. Applications on prescribed form (obtainable free by sending self-addressed unstamped envelope size 23x10 cms. to Assistant Registrar (R), HAU, Hissar, accompanied by prescribed fee of Rs 10/- in the form of Crossed Postal Order in the name of Assistant Registrar (R), HAU, Hissar payable at Hissar Post Office, should reach Registrar by 5.3.1979. The envelope containing application must be superscribed as "APPLICATION FORM FOR THE POST OF——"

1. Professor of Agriculture Business Management ; (Rs. 1500-60-1800-100-2000-125/2-2500) : i) Second class Bachelor's degree. ii) Second class Master's degree in Business Management or equivalent Post-graduate Training. iii) Ph. D. in Business Management with special reference to agriculture or animal sciences. iv) Ten years experience of teaching/research/actual work in Business Management in relation to Agril. development out of which at least 5 years should be as Associate Professor or of equivalent rank.

2. Associate Professor (Animal Products Technology) : Rs. 1200-50-1300-60-1900) : i) Second class B.V.Sc. & A.H./B.V.A.Sc./B.Sc. (Agri.)/B.Sc. (Animal Sc.). ii) Second class in M.V. Sc./M.Sc. (An. Sc.)/M. Sc. (Food Tech) with specialization in meat/wool technology. iii) Ph. D. in meat technology/wool technology. iv) Five years teaching/extension/research experience as evidenced by published work in journals of repute.

3. Soil Chemist : (Rs. 1200-50-1300-60-1900) : i) Second class B.Sc. (Agri.)/B.Sc. ii) Second class M.Sc. in Soil Chemistry or Soil Fertility. iii) Ph. D. in Soil Chemistry or soil Fertility. iv) Five years' experience of teaching/research/extension in soil chemistry and plant nutrition problems.

Note : 1. One or more of the Essential qualifications relaxable for candidates with outstanding attainments/experience.

2. Special weightage will be given to extension experience possessed by the candidates for posts in disciplines amenable to extension.

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Hony. Editor: ANJNI KUMAR

Three Decades of Higher Education

Anand P. Srivastava*

A score and half years provide too short a perspective for proper and authentic assessment of success and failure in any social activity. Nor, verdicts are possible in a field developing so rapidly as higher education. Yet, a backward glance over travelled roads by universities should be considered desirable. The second difficulty is that terms *failure* and *success* are relative, not absolute. These terms, like beauty, reside in beholding eye making assessment highly personal and idiosyncratic. Then, there is the hurdle of the fact that success can be even in a failure; and that for the counting of success the characteristic of striving appears more relevant than the phenomenon of actual results achieved. Therefore, it appears difficult to say that certain points are unmitigated failures and that certain trends are unqualified successes. In fact, what we can do in evaluating the thorny thicket of higher education in India, is to critically examine a selection of concepts and activities during the last thirty years.

The first point in this essay of evaluation should obviously deal with the tempo of the general body of academicians having responsibility of administering, planning and conducting teaching in our universities. In trying to understand their attitudes toward innovations and degree of confidence of success in their efforts, it does become apparent that like most of the Sophists, (who rejected philosophy and search for truth because they believed that ultimate truth was unattainable), Indian scholars possessed strong hidden doubts that despite our rich seminars, useful conferences, and comprehensive commission or committee reports, not much way going to be faithfully and properly implemented. Hence, the chances of reforming our higher education, like achieving ultimate truth, remained largely dim. Growth of and emphasis on specialisation fragmented the spans of abilities and understanding of our professors. There has been no solid understanding of necessary relationships to the totality of scholarship and higher education. The second set of victims of intense specialisation by faculty had been the common issues like better teaching methods and adoption of newer techniques of comprehension by students. These weaknesses could best be described as the absence of proper synthesis in the arena of higher education.

The other major general failure had been on the front of the performance of academic associations and societies. Learned societies originated in the 16th century in England and by the end of the 19th century they enveloped the whole world. India too has national associations and societies on almost each subject. But the achievement by these societies, as compared to their counterparts in other countries, had been less than satisfactory. These societies met periodically to elect new office bearers. This task completed their major roles. Academics have by and large tended to be "Seminar and Conference happy people". Claims of continuing education through conferences are laudable as a major success but the failure lies in our inability to conduct objective analysis of what else our Seminars and Conferences are accomplishing.

The other category of failures fall under the atmosphere of disjunctions which existed between State authorities and University power; between substantive planning and actual budgetary provisions made; between the structure of a teaching department and its functioning; between expectations from and actual performance by teachers including their interrelations, and between the theory of direct democracy in university and its actual practice by councils and unions.

Learning in our higher education was on single track, purely one dimensional, based on hours with the objects of small and also traditional courses. The courses did not interest students. University remained aloof from contemporary social issues and students had no role in making educational policy.

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Faculty remained interested in following its own academic career and was not highly concerned with the education of students. Teaching was of low quality and suited the convenience of teachers. A teacher may have aimed at it or not, he generally succeeded to get everyone in a class partially, if not fully, asleep. Most of lectures were boring because in style and contents they covered areas also covered in books prescribed. Concept of tutorials got sunk in the land of the Ganges River because teachers did not take required pains. Not much options in selecting courses, resulted in low motivation. As numerous subjects were to be studied at a time, students were unable to do justice to any one subject. The greatest enemy was the examination system. It required the ability to remember and to reproduce rather than the capabilities of doing by a thinking person. All concerned, with no exception, decried our examination system but no university had the courage to do away with it.

Students interest and abilities failed to get attention in their development. Higher Education, in brief, divorced learning in life and placed student in passive roles. It forced a student to study materials irrelevant to his own individual interests. It had absolutely no place for students whose academic preparations are poor. Higher percentage of students were failed and thus discouraged for the whole life. University authorities got influenced and controlled by politicians and bureaucrats. University admissions were sought largely for ensuring a better economic and social status. But majority of students remained unemployed after completing their courses. Since last 30 years political conditions disturbed the nation including our universities. We did nothing to educate the powers and would-be-powers in the country. We are a vast country but our training so far had been for managing smaller affairs. Now, bigger units of organisations have emerged all around but our methods remain, the old ones, suitable only for smaller units, for managing. This phenomenon created most of problems in the way of efficiency. The enlarged Academic Councils and University Courts are examples to prove the phenomenon. Left to themselves the universities developed lethargy, a kind of prejudiced conservatism and thereby an attitude of intolerance toward innovation. Subject-specialists, but not general scholars, found place on the University Grants Commission. Now no more the higher ups, like the ex-Chief Justice, find a place on the Commission. The result is that the Central Government does not bestow that honour which was once the prerogative of earlier members of the Commission. The members lost their effectivity because they called on in a queue on bureaucrats in educational administration. We had no scholars who could walk in freely in corridors of power, including the Prime Minister (s) with the prerogative of reverential regards.

Today our Public Sector Organisations are more independent than Indian Universities. Complete autonomy requires complete independence. As financial autonomy is not there the piper plays the tune of bureaucrats. The bureaucrats ultimately took up the custody of the custodians of Indian universities. Universities have in reality become the arms of ruling

bureaucrats both in central and state universities. Unless the method of block grant for five years, or so, is revived the universities will continue to become more and more dependent on Secretaries and other officers in governments. The possible bulwark in shape of private universities, which may have shown newer ways, remained non-existent in our country. The importance of having sufficient number of layman (from top positions in society) on our syndicates and executive councils appears to be a good solution to our problems of administration of higher education. Continued absence of a dynamic and objective (not only union activities) body, like Associations of University Professors, has already created a big gap in our higher education. While our primary schools failed in teaching reading and language properly, and high schools failed in developing comprehension and writing, the universities lost their way completely by not cultivating analysis and synthesis in our students. Socratic ways of probing, questioning and regrouping of ideas and concepts, still the sovereign paths of learning, were not practised by our teachers. Our university educands failed to provide intellectual, political, economic and artistic leadership to the nation during decades of active life after graduation. A university has three lives to care about past, present and the future. Our universities failed in identifying at least those brains which will keep the nation alive in the future. Qualitatively our higher education did not improve much as compared to the colonial days, on the contrary standards did suffer in certain ways. Educational escalators brought millions to universities and these students used universities as a support to stand in the society, but not for illumination, like a drunkard uses a lamp post.

Successes of higher education come to mind less readily than the failure, because higher education is highly ambitious and sophisticated entity. It remains the principal avenue through which a developing country can attain all round progress. As problems grow more complicated in a society, higher education becomes more important, not less, as resource for solution of difficulties.

In 1947 we had only 20 universities and the year 1977 saw 105 Indian universities in operation. The higher education after the independence has progressed enormously for, in 30 years, 85 new universities have been established. The rate of growth of so many universities in such a short time should be a world record in itself. No other country in the world has added on an average three universities each year, for a period of 30 years. This growth, if counted as a success, shall be more in terms of quantity than in quality, but it is for the first time that middle and lower classes came to campus life. For qualitative improvement and regulation of growth the nation witnessed during 50's the emergence of the University Grants Commission, for co-ordinating the efforts of various universities and for improving their standards. The character of the Indian University Grants Commission is more or less like that of the colonial masters in England. The structure of the Commission, its functioning and areas of operations resemble a great deal with that of the University Grants Commission in Britain. But in actual operation the Indian

University Grants Commission has not been able to maintain either the quality or the sophistication that one sees in the operation and achievement of the British University Grants Commission. Yet the strivings and endeavours of the University Grants Commission in India are certainly laudable in such a short period. The difficulties faced by the University Grants Commission in India have been much more complex and deeper in its tasks than that in Britain. The second major success that may offer itself for consideration is the establishment of some Central Universities in India. The Central Universities have contributed great deal towards the attainment of academic and research standards and they have also helped in the progress of non-Central Universities both old and new, but not without learning a great deal from them in return. Other major achievements of our higher education had been the improvement in the potentiality to attract better minds to teaching and research through up-gradation of salaries of university teachers; through provision of greater number of senior teaching posts in most universities and through the provision of much better service conditions for teachers including the facility of study leave and availability of fellowships. The Indian higher education stands in high distinction for its ability wherein issues and threats of censorship practically did never enter the university horizons. Censorship had its way in the universities of numerous developing countries and to some extent its milder threat were discernable even in the universities of some developed countries. It is in this context in particular that the Indian Scholarship deserves congratulations. The next major success of Indian Higher Education is that during the last 15 years it was able to survive campus violence, strikes by students, teachers and karamcharis and many Vice-Chancellors in universities performed in such noble ways that they need to be honoured with available awards like 'VIR CHAKRA'. The other major success appears to be through the efforts of agile sections of university faculty for developing the consciousness of interdisciplinary studies and also for providing for them in some way in many universities. The Indian scholarship had been quite alert, and to a great extent successful, in the promotion of research, at least of some kind, in teaching departments and for obtaining fairly greater number of scholarships for students. In such a short time it is not expected that either all or most of the university research should be close to and/or higher than of average standards, particularly during the early years of initiation of this activity. Yet, the research journals of the world published from about 6 to 10 per cent of their total contents from Indian sources. The other remarkable success achieved by Indian scholarship had been in the development of comparatively better university libraries, which certainly are still poor enough to be matched with international standards. Indian scholarship has yet to unfold and derive numerous advantages which are available in the kit of modern information and library scientists. The stage must soon arrive wherein from one place in the country, more than one is neither possible nor desirable as per experiments in other countries, any scholar in the country can seek for up-to-date bibliographical lists, current awareness services based on

the profiles of researchers and academicians, photocopies on subsidised rates, and lending of graphic materials to various corners of the country. While the Indian scholarship had been the victim of more than normal mutual jealousy and hatred, the rise of the lotus was seen in the growing trends of group discussions between teachers and scholars. The last three decades have witnessed better and greater writings and publications by Indian Scholars. The establishment of Centres of Advanced Studies in certain selected departments of Indian universities was no doubt taken as a cheating game by smart ones but it will be unjust to deny their glowing contributions in the development of respective areas of scholarship in the country. The Indian universities and scholars have certainly seen the emergence and development of better hostel and sports facilities, which were much too short previously. The Indian scholar has reacted very well in his contacts with the scholars of other countries and in the process it has been his privilege to get honour and respect from distinguished academicians of other countries. In brief, the Indian scholarship has shown over years greater and growing virtue of better sense of priorities in its plans of development and in their implementation. But there still appears tremendous scope in the future years, and perhaps always, that our better sense of priorities reach the stage close to the best sense of priorities within the limited resources available. To conclude, unless much is achieved in respect of igniting the community of students for better learning processes, all these successes shall only mean success of the means and failure of the end.

By the year 2000 A.D. the Indian Higher Education shall endeavour to innovate its contents and direction somewhat in following ways. It should devise newer learning situations comprising learning through real activities. The dull and passive notes-taking lectures shall disappear. There shall be some courses which will not be job-oriented. Unless income oriented approach is partially supplemented by learning *qua* learning universities will not regain their real character of scholarship. We must be able to provide for numerous course choice for our students. May be our universities are able to replace fail or pass certification role by issuing just attendance certificates. Also, there may be no minimum entrance requirements. People shall be coming to universities in thirties, forties and fifties for specially tailored courses. Tuition income shall obtain greater percentage in university credits.

Community of students will develop pressures on faculty performance and roles. Student Unions shall be involved in these reforms though they may not be exactly appointing and dismissing teachers. One (or more) nationally renowned teacher in each course shall be lecturing the entire nation through television network. Our libraries shall have computers and all libraries in a town shall be under one co-operative control and supporting services will be on great increase in our universities. The numbers of students and faculties will fall. It is also hoped that tenure of Vice-Chancellors will be peaceful and the theory that 'Vice-Chancellor can do no wrong' will be greatly in vogue, eliminating strikes and violence on a Campus. □

University Procedures for Providing Grants to Teaching Departments

M. R. Bhiday*

Problems of university departments

The teaching departments of universities in India have always complained about lack of funds for improving the teaching and research facilities in the departments. Similar complaints also come from college departments. In general, it is observed that Indian universities have an ad-hoc method of funding departments of studies.

Financial support—A survey has been made about the funding procedures existing in universities in India. It is difficult to find any correlation between the needs of the departments and the funds provided. It is also observed that the departments themselves have not made any systematic study about their own needs, e.g., no data were available regarding the amounts needed for the day to day maintenance of the laboratories, of the administrative expenses, of the electric, gas and water supplies, and the capital equipment needed for improving the quality of teaching. The tendency has generally been to accept whatever the university administrators give and meekly grumble about it. On the part of the university administration also, no studies have ever been made on any of these issues. It is a sad experience for the departmental heads and teachers in teaching and affiliation universities that most of the attention of the university administration is concentrated on routine operations with college affiliations, enrolments, prescribing syllabi, conducting examinations, and holding hundreds of meetings of committees etc. The university funds are, to a large extent, utilised in these relatively less important centralised operations. This has happened to such a great extent that the word 'university' has become synonymous with the administrative office of the Vice-Chancellor, while, the true meaning of the university ought to be associated with the departments and colleges where real academic and research work should be in progress.

Administrative support—There is hardly any university in India which takes care of the departmental administration. The departments are usually not provided with adequate administrative staff. In some universities even store-keepers are not provided and the professors are expected to look after the stores and stock taking. The situation in the departments is so annoying so far as administrative staff is concerned, that one really begins to wonder what the 'university' in practice means. There is no method of providing even typists, let alone stenotypists to the departments whereby, the academic staff have to waste their time in writing letters, in

many cases internationally, besides writing their own research work.

If one compares the situation in universities of the world except those in India, one finds that there is one steno-typist for every professor, and also one for every two or three associate or assistant professors. The departmental office is controlled by a fairly senior administrator who does all the routine administrative work of the department. This gives the academic staff sufficient time to carry out their research and teaching, and to interact closely with the students. Everybody in India blames universities and professors for not turning out the best in terms of quality of their teaching and research, but nobody ponders about the complete absence of infrastructure facilities of the university departments by way of maintenance, and development grants and also administrative facilities.

Possible solution

The University of Poona has looked into these problems and has tried to improve some of these conditions at least partially. The new thought processes are the right step in the proper direction and it was, therefore, felt that sufficient publicity be given to this programme of the University of Poona so that it could be appreciated and perhaps adopted by other universities also. Unless such positive steps are taken to improve the conditions of working of the academic staff in universities and colleges, it is impossible to produce work of high standard, and to interact with the industry as also with the community around. It is also impossible to attract leading young scientists who have migrated to western countries. Most of them have gone abroad, not because they love the worldly pleasures available in the western countries, but because even the minimum facilities and infrastructure are not made available to them in Indian universities. It is because of this situation that hundreds of jobs in university departments are lying vacant, since the existing appalling conditions are most revolting to talented young scientists trained abroad. The best available brains in India also tend to move away from the university or the college.

Funding on pro-rata basis : Science departments—The University of Poona has decided to make funds available to the departments on a pro-rata basis. There are four types of academic workers in each department, namely, (i) M.A. or M.Sc., (ii) M.Phil., and (iii) Ph.D. students, as well as (iv) the academic staff themselves. On a pro-rata basis the expenses were calculated for each department for each of

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the "above" categories and the total of all these amounts was determined to be the requirement that could be provided to the departments concerned. In such a way, the efficiency of teaching and research could be raised to useful levels. The usual questions asked by the finance office were, "How were you managing with lower funds in earlier years?" "Why was it necessary to raise the funding levels this year?" The answers to these questions were simple namely, that with the earlier low funding, the departmental efficiency was only 30-40%. The students had to be refused many normal facilities in terms of raw materials, stationery, communication, transport, and such other expenses which the students required for effective learning. With the new funding procedure determined on the pro-rata basis, each component of the academic workers of a department can be provided with basic facilities. The academic staff of the university departments also have to be provided with a contingent grant for the purpose of their teaching, research and extension work, in providing essential facilities, such as cyclostyling, photo-copying and minor components for their research work. The new principle involved is that the academic staff does research work for the university as a whole and not for themselves personally. One of the drawbacks in university research in India is that it has tended to be largely individualistic. One has now to accept the concept of departmental research where the intellectual resources are pulled together in one or more groups. The physical facilities should be provided to the departments by the university in a massive effort in a few selected thrust areas.

Humanities departments—The situation in university departments in the fields of social sciences and arts that existed before these new principles were accepted was simply deplorable. There is a general concept with the university administration that the Departments of Social Sciences need no contingency grant in running their departments. This had reduced their facilities practically to zero, and hence, the quality of their research was indeed relatively poor. In many departments there was no space even for members of staff to sit and read or discuss with their students. There are certain basic facilities which were never provided so far. The contingent grants to each department were of the order of a few hundred rupees per year for the last two decades, even though, the number of students involved in these departments was of the order of hundred or more. It was, therefore, impossible to find teachers available to the students in the department. The students preferred to stay in canteens rather than in departments. With the new funding procedure, the Arts and Social Science Departments have gained to a very large extent, and can now hope to provide some of the basic facilities to all the four categories of the academic workers in the departments.

One has, however, to devise proper methods of utilizing these funds so that these are not concentrated in the hands of the Head of the department alone. Steps can be taken to make decisions by mutual consideration within the faculty for which new

psychology for co-operation between the staff members has to be evolved. These are subsequent steps after the basic has been achieved, viz., increase of funds by the new funding procedure on pro-rata basis. Table 1 shows the changes in the funds provided to each department in the University. These changes are by themselves not sufficient, but they show the right path for implementation of higher educational reforms within the available resources. Dialogues have, therefore, started regarding the involvement of academic staff in the distribution of funds.

Table 1
Statement Giving the Financial Estimates of Various Departments

Name of the department	Amount of the financial estimates during 1977-78 (Rs. in lakhs)	1978-79 (Rs. in lakhs)
1. Chemistry	3.06	3.80
2. Physics	1.45	2.68
3. Botany	0.68	1.43
4. Zoology	0.55	0.95
5. Geography	0.11	0.70
6. Mathematics and Statistics	0.18	0.56
7. Geology	0.61	0.79
	in Rupees	in Rupees
8. Sanskrit & Prakrit Languages	200	12,300
9. Marathi	1,300	13,300
10. Hindi	1,600	7,200
11. English	2,400	2,700
12. Experimental Psychology	5,600	15,000
13. Politics & Public Admin.	1,700	9,000
14. Philosophy	700	14,100
15. Law	500	4,000
16. History	2,000	10,100
17. Sociology	Nil	10,600
18. Anthropology	9,000	26,000
19. Linguistics	1,500	9,500
20. Ancient Hist. & Archaeology	14,200	17,300
21. Defence Studies	1,300	4,700
22. Modern European Languages	5,600	23,000
Grand Total in lakhs	7.01	12.30

Administrative support to departments.—Certain norms have also been laid down regarding the provision of administrative units to each department. The criteria for the provision of administrative staff are based on two factors viz., (1) the number of total persons in the department, and (2) the total financial transactions carried out by the department, which would include both the university funds, as well as the research grants received from various

funding organisations. The Table 2 shows the administrative staff that would be provided to the departments on the basis of the above considerations.

Table 2

Requirements of Non-teaching Administrative Staff of the Department of Studies

Persons in the Department	Budget in lakhs	Non-teaching staff
50-100	0.5-1.00	1 Senior Clerk 1 Junior Clerk 1 Store-keeper 1 Steno-typist
100-200	1.00-2.00	1 Asstt. Supdt. 1 Senior Clerk 1 Junior Clerk 1 Store-keeper 1 Steno-typist
200-300	2.00-3.00	1 Superintendent 1 Asst. Supdt. 1 Senior Clerk 1 Junior Clerk 1 Store-keeper 1 Steno-typist
300-above	3.00-5.00	1 Superintendent (Accts) 1 Superintendent (Admn) 2 Senior Clerks 2 Junior Clerks 1 Stenographer 2 Steno-typists 1 Store-keeper 1 Head Store-keeper

Evaluation and assessment of the departmental work—A mechanism had been provided, even in the earlier act of the university as also in the new act of 1974, for the academic evaluation of the teaching, research and extension work of the staff and students of the departments of studies. However, for the last fifteen years or so, no steps have been taken either to evaluate the work of the departments or to analyse their development plans in respect of the several five year plans. Even under the new act of 1974, section 65 provides for the academic evaluation and planning of the departments. No action has been taken by the Vice-Chancellor and his administration during the last four years to give effect to this important section of the act. The administration has no face and any case indeed, to ask questions on these issues since there is no possibility of introducing any reform in education with the very meagre resources made available to the departments. This inactivity in fulfilling the responsibilities laid down by the act on the part of the administration has given rise to a general apathy and indifference towards improvement of the quality of education at all echalons of university life.

Funds were and are being wasted at all levels on T.A., D.A.'s for hundreds of academically non-productive meetings. There are a number of well-

known instances of individuals becoming members of a large number of committees and earning thousands of rupees without paying tax on income by way of T.A., since the amount claimed is never the amount spent. The new funding procedures and associated savings of useless expenses is expected to give a new turn in improving the academic atmosphere in the university. Evaluation and planning concepts can then be applied to monitor continuously the rate of growth and better output from university departments, thereby increasing their accountability.

To increase the university's financial resources

How then, should the university find resources to do this additional departmental funding in money and manpower, is the next obvious question. The Government can always be approached. However, Government authorities have rightly been asking the question whether the university has fully tapped and properly utilised its own resources. The only large resource for the university is the examination money. The Government of Maharashtra has agreed to give examination remuneration to teachers even though the salary scales were enhanced as per U.G.C.'s grades. It was felt necessary, therefore, that some new thinking should be started regarding the conduct of examinations and the equitable and rational distribution of remuneration, to all categories of employees, teaching and non-teaching.

Drawbacks of the present remuneration pattern The examinations in Indian universities have been, by and large, the main cause for politics within the university. Appointments to the offices of the Dean, Chairmen of Boards of Studies, and to the Executive Council have always been done with an eye towards acquisition for power of distribution of various favours. The nature of these favours has various forms, such as examinerships, supervisorships, college inspection committees, and so on. These appointments are really insignificant academically. However, they have a great power in creating strong groups within the university. After independence these power groups became so strong that it was impossible to introduce any reform in the pattern of teaching, or in the syllabi. This has the same tinge as the general politics in the country, the difference being only in the order of magnitude. Every educational reform got smashed on the huge solid rock of the examination system. Mass copying, favouritism in marking, that a degree could be bought for a price, were the usual talks of campuses. The students in return had to pay the price for this in terms of lowering the validity and faith in the whole educational system in the country leading to the so-called educated unemployment. Indeed, the examination system totally replaced the educational system in the country, if the latter existed at all before independence.

With this background, the University Grants Commission decided to introduce reforms in the examination system, and prepared a plan of action. Twelve universities were selected to introduce the examination reforms, which consisted mainly of four parts: (i) introduction of semester system, (ii) continuous internal assessment, (iii) question banks, and

(iv) grades in terms of letters A, B, etc. A number of workshops were conducted throughout the country to create an atmosphere for accepting the reforms. Universities were left to decide the manner of implementation of these reforms. Since the University of Poona was one of the twelve universities selected by the U.G.C., it was easy to organise, at least partially, the implementation of the reforms in the four aspects mentioned above, though in a form largely diluted due to a complete lack of confidence and conviction of the officers in the administrative machinery of the university and colleges, as well as the government.

With the introduction of continuous internal assessment to the extent of 40%, and the inclusion of minimum questions from the question banks to the extent of 30%, the work of the paper setters is now reduced only to 30% in respect of only the new questions. This called for a fresh approach to the concept of remuneration for paper setting and marking. In the new examination system, every teacher has to examine his own students at least to the extent of 70% of a paper. This could be increased progressively to 100% by having a large question bank from which questions could be selected by a suitable body either at the university or the district college council level. The selected question numbers from the question banks could only then be sent to each college in a sealed cover. This would avoid all the expenses of paper setting and printing, a number of meetings for these, administrative work involved, and considerable expenses involved in transport of the sealed and secretly printed question papers. The secrecy required in the earlier system involved a great deal of expense and headache to the university administration. All this had to be done although the faith in the old examination system and its validity has gone down to zero. A university degree today is no licence for further studies or for any jobs. After passing the university examination, every employing agency has its own method of selecting their personnel. Admissions to higher institutions of learning in India and abroad are determined by such institutions in their own way. Why should the universities then spend so much time, money and labour in the ever increasing complexities of the traditional examination pattern based mainly on the concept of centralization due to lack of faith in the teachers? It is again these very teachers who are again employed as examiners by the centralised authority.

With the old annual examination system, the centralised examination authority had a manageable size and volume of work. With two semester examinations, increased number of students and a vastly increased number of courses, the work of the examination section has increased enormously and they are always asking for more and more staff. This has resulted in complete institutionalisation of the examination procedure. Everything has to be done by rules and regulations which indeed are utterly inadequate and incapable of raising the standard of teaching and assessment. This has resulted in loss of faith in the system as a whole. Professional educators have become slaves of the system which

has left too little incentive to provide quality education to most students, rendering them unemployable and useless to the nation. On the other hand, there are plenty of jobs for which properly trained persons are not available.

Why must we de-institutionalize the system?
Students are deliberately confused about the process and substance. Once these become blurred, a new logic is propagated: the more treatment of rules and regulations there is, the better are the results; or escalation leads to success. The student and the teacher are then used to confuse teaching with learning, grade advancement with education, and a diploma with competence. Their imagination is channelised to accept service in place of value. Medical treatment is mistaken for health care, social work for the improvement of community life, police protection for safety, military poise for national security, and the rate race replaces useful and productive work. Health, learning, dignity, independence, and creative education are defined as little more than the performance of the institutions which claim to serve these ends, and their improvement is made to depend on allocating more and more resources to the managements of the institutions at the cost of the actual field workers.

Efforts at decentralisation at Poona University
Such institutionalization of values leads inevitably to physical pollution, social polarization and psychological impotence; the three dimensions in a process of social and political degradation and modernised misery. I believe that most of the research now going on about the future tends to advocate further increases in the institutionalisation of values and that we must define conditions which would permit precisely the contrary to happen. We need research on the possible use of technology to create institutions which serve autonomous creative and personal interaction, and the emergence of values between the teacher and the taught, which essentially should be rendered uncontrollable by bureaucrats.

After persistent arguments with the authorities, the administration of the University of Poona has now reluctantly allowed to examine critically the extent to which decentralisation of the examination system can be brought about. The system as it works today creates very dilatory procedures. The rigidity of the affiliating system alone deprives the good teachers of the opportunity to take initiative for creative, imaginative and more fruitful action. It is, therefore, absolutely essential to decentralise authority and confer autonomy, from the university administration to the university departments, and also from the universities to the colleges. This reform may be done either directly, or as a first step through the district college development councils, to be set up as intermediary bodies till such time as required for colleges to gather courage to shoulder their normal academic responsibility. The concept of the colleges development council has been proposed by the U.G.C. in its approach paper for the VIth plan. The exact functions, however, are not mentioned by the U.G.C., yet, it can be extended to the district level since the concept is useful and we can

build a mechanism for college development on the foundation of the extended district colleges development council. In any case, it is essential to radically alter the existing bureaucratic and centralised structure of the universities in order to avoid delays, to evade attempts at establishing rigid uniformities which provide alibis to erring individuals and institutions, and to create an elastic and dynamic system so as to promote innovative initiatives and reforms.

District development council for colleges—Ideally the university should affiliate colleges who can acquire an autonomous status within the university. But the colleges have become so slavishly dependent on the so-called university structure that they are just scared of assuming any responsibility of academic freedom by themselves. As a first step, therefore, towards realisation of the final concept of autonomy, partial decentralisation could be achieved using the U.G.C.'s development council concept at least in respect of the new semester examination system where continuous internal assessment forms a major method of evaluation of the student's performance.

The principals of about 20 to 25 colleges of the district will constitute the district council. This is an important innovation particularly because the present university act has restricted, and rightly too, the membership of the university academic bodies. All the principals could now be approached through the district college councils more effectively. There are several universities in India having jurisdiction over a district or even a city as the limit. Four or five district college councils in a university could then form into an effective machinery between the university and the colleges. Such an arrangement could be made more functional than the present cumbersome, centralised, time-consuming and issue-avoiding system.

We are, therefore, examining the question of forming District Colleges Councils for the purpose initially of (i) conducting all examinations in the colleges of the district, and (ii) to plan the development of the colleges in the district.

This district colleges council will organise examination procedures, mostly of continuous internal assessment, the collection of examination data from different colleges, the conduct of the end of semester comprehensive examination, and compilation of results. The district colleges council, will do this work with the help of the academic, administrative as well as departmental staff of the colleges within the district.

Question of remuneration on the new pattern—The payment of remuneration to these staff could again be based on certain norms, e.g., let us assume that all the district colleges collect a sum of roughly say Rs. 20 lakhs per year as examination fees from all the students of the colleges. This amount would be deposited with the district colleges council and one can then utilise this money in the following manner:

(i) A certain percentage, say 50% should be handed over to the university, leaving a sum of rupees

10 lakhs to the district colleges council for conducting the examination.

(ii) Most of the work of the paper setting etc. is done by the university in the early stages only if necessary.

(iii) From the amount of Rs. 10 lakhs left with the council, say a sum of Rs 2 lakhs is set aside as the reserve fund and expenses for conducting the examination in each of the colleges of the district.

(iv) This leaves a sum of Rs. 8 lakhs and when divided by twelve, a sum of Rs. 66,000/- per month would be available with the council for disbursement amongst the entire staff of the colleges as remuneration. This remuneration can be calculated by a computerised programme based on the percentage of the salary, depending on the total number of staff, right from the water-boy to the principal of every college in the district.

(v) The actual monthly payment for each worker would be calculated on the basis of certain percentage depending on the total number of salary grades and the number of persons in each salary grade.

(vi) On a very rough measure, can one calculate the average remuneration, assuming that the entire staff in all the colleges of the district would not be more than 1000. Thus, at an average, each staff member gets Rs. 66 per month as examination remuneration along with his salary. Having received this remuneration, it is now expected that all the staff members of the colleges, teaching and non-teaching, would be involved in the conduct of the examination and no further payment would be made to them.

(vii) If a larger college in a district wants to have its own examination machinery it can do so exactly in the above manner. This has to be encouraged since in the final picture each college should hope to conduct its own examination.

Advantages of the new remuneration system

This system has a number of advantages which can be grouped into three categories; (a) financial benefits. (b) academic benefits and (c) administrative benefits:

(a) Financial benefits

1. The university stands to gain to the extent of 50% of the total examination fees collected as against the present 10%.

2. Each individual teacher, and non-teacher in the office of each college gets a fixed amount of money per month as examination remuneration for whatever work he is asked to do by the college principal, may it be continuous internal assessment, or supervision or practical examination or tabulation, or transfer of information and data from one form to another and so on.

3. Considerable expenses on account of travel would be saved since teachers and administrators would now not be required to travel from one part of the University jurisdiction to another distant part. This would save several lakhs of rupees by ways of savings in T.A., D.A. for meetings, practical examinations etc.

(b) Academic benefits

1. The teacher or the non-teacher need not write letters to the Dean and other authorities for giving them examinations etc. He will be academically more free and less subservient to influential authorities and academic heads in the university. He will then be free to attempt his methods of teaching and evaluation since a major portion of the assessment would be internal, in the initial stages, to be made fully internal as more experience is gained by the new system. The teacher will get back his self respect which he has completely lost today because of the crumbs of bread thrown at him by way of examination favours.

2. On the university side, considerable freedom in respect of examinations would be transferred to the colleges even before they become formally autonomous, and the examination staff released from the present examination burden can be diverted to the university departments. This would further release the administrative load from the academicians of the university departments. The academic staff then can devote more time to their programmes of teaching, research and extension services to the community. The last is the third new dimension suggested by the U.G.C. for academicians in universities and colleges.

(c) Administrative benefits

A great deal of labour would be saved in writing thousands of cheques after examining remuneration bills from thousands of examiners. The finance section as well as the examination section of the university would be considerably relieved of these responsibilities. Only a skeleton staff could be retained in the examination section along with the new examination reforms cell financed by the U.G.C. to co-ordinate, organise and administer the total examination procedure through the intermediaries of district colleges development councils and the autonomous colleges. The function of the examination reforms cell would be to organise the question banks in such a way that the number of questions in the banks would increase and improve continuously. A stage should eventually come when the questions for the end-of-semester comprehensive examination would totally be set from the question bank and it would then only be necessary for the university to decide the question numbers from the question bank, and communicate these to the colleges instead of getting the question papers printed at great cost and circulated in taxis to different colleges in the jurisdiction of the university. In this process, it may even be not necessary to have the same questions for all colleges. With some maturity, experience, and academic integrity the colleges themselves can set their own question papers obviating the need for centralised setting procedures.

Such examination systems are in vogue currently in one form or the other in almost every developed country. It is only in India that we have been making a fetish of the examination system.

Disadvantages of the system—It may be useful to have a debate on the advantages and dis-

advantages of this system. The major disadvantage, I have so far heard, is that the colleges and teachers in colleges would be pressurised to produce good results of students of their colleges. If the colleges succumb to such pressures from students and locally important persons, they would lose their character and reputation in no time. The student from such a college will be debarred from any future prospects outside the college. Such situation would be reached very soon, and it would be in the interest of students and teachers that they make their assessment on an impartial basis so that their students will be respected outside. If the teachers and the students lack integrity, then the results of any centralised university system also can be disrespected by employers as has happened in some universities of India. Such instances are not few, and centralisation procedures will not work in any case, if the teacher integrity is non-existent.

Looking to the large number of advantages I believe that the disadvantages are minor and could be corrected. The financial gains of the university would clearly bring about a method to wipe out the deficit of the universities within a few years. In addition, the departments can be funded in a better manner and the academic staff and students provided with more facilities and time in carrying out their academic work towards excellence, which is the main goal of any university.

Summary—Decentralised examination

The district developed council of colleges will, thus, serve as a useful, intermediate and cooperating mechanism to bring about reforms in examination system.

The major worry of academicians was concerned with the malpractices of mass copying by students supported directly or indirectly by teachers (at least in some cases), and the manner in which to curb these tendencies. Mis-marking and mis-evaluation are some of the prominent lapses on the part of the teachers, including graver practices like deliberate markings up or down of the answer scripts. These offences were tackled by the centralised system only when detected. The centralised machinery to detect these malpractices has converted the university practically into a department to detect academically criminal offences. Centralisation will gradually convert the status of the university more as a police department rather than an organisation which recognises the values of the educational system.

The district colleges development council would handle and correct this situation more effectively, since the college principals will participate in this process with greater freedom and from closer quarters. After all, it is only the principals who operate through the centralised lapses committee or the unfair means committee. The field of operation of the council will be much narrower making it possible to pin-point the defaulting persons or institutions within the district.

Each issue could be considered in detail and solutions found through the council which really

becomes a 'systems approach' which could help in evolving a good mechanism to raise the academic level of a manageable group of colleges in a shorter period of time enabling each one of the colleges to gain ultimately the autonomous status. The whole concept is like the grant of dominion status to a group of colleges with freedom to choose complete autonomy for a single college.

Coordination of development at district level.

The second major function of the development council would be to coordinate and plan the higher educational development of the colleges in the district. At present, there is no machinery which helps the colleges in formulating their plans for submission to the U.G.C. and the Government.

Each district council of principals should examine the requirements of their district and prepare a comprehensive plan providing mutually distributed facilities for higher education, avoiding duplication or multiplication of courses. A good diversification of course structure can then be achieved with inter-disciplinary approach to new courses under the semester system in order to achieve rural development through education.

The district colleges development council would be a much more viable and functional unit of the university which can be examined by the U.G.C. for funding purposes. The university also may provide some funds in deserving cases to match the U.G.C. grants. This could be done using some of the funds saved from the examination expenditure.

Such district colleges development councils can also rightly plan the rural development thus opening new directions to higher education, particularly in extension services. Rural development, so far, has been merely a high fashion. It is a high fashion because the Government has of late raised the banner, and more fundamentally because there is increasing agreement that rural development offers solutions to the multiple problems of food shortage, population growth, under employment, income maldistributions and rising rural discontent. It is for this reason that the sixth plan policy pronouncements give a prominent place to rural development.

It is also true that we have been talking for quite some time about planning at the district level. This is, however, thought to be done by the district administrative machinery of the Government leading to bureaucratic functioning. This is quite inevitable at present since there is no other mechanism of enlightened committees for planning at the district level. The involvement of the colleges development council in this mechanism can serve as the most important, missing link with which implementation of rural planning can be brought about. This is more so if the entire concept of education includes extension services, inter-disciplinary studies and so on. New types of inter-disciplinary courses could be started by each council within its jurisdiction after carefully assessing and analysing the requirements of the community. It is only then that the large number of rural colleges will, for the first time, find

their rightful place of honour in the structure of the university and the society.

Poona University broadcasting station—The University Department of Physics has approached the Central Government for permission to use its broadcasting equipment for the purpose of educational broadcasts of various types. It is hoped that the Government which has been talking loudly about a 'democratic with freedom of speech approach' in governing the country will accept our proposal. In that case the district colleges development councils will play an important role in acting as regional study centres. These could form a liaison between the university academicians and the rural community in order to implement techniques of imparting broad-based education through the radio. Indeed, this system would really form an open university wing of the University of Poona with the district council acting as a regional centre and the individual colleges and schools serving as local centres. Such an academically more functional hierarchy would really be a useful component of the systems approach in solving many of our present day educational problems created by large numbers and meagre facilities for academic and/or administrative communication. This has caused the centralised rules and regulations machinery alone to get supremacy making the colleges—principal, students and teachers—slaves of the system.

In short, the new systems approach allows great flexibility, and many new directions of attacking the problems.

Appeal to academicians and administrators—The British were not leaving India on the pretext that we Indians were not united, mature and sufficiently experienced to govern ourselves. All these qualities were, however, to be determined by the British rulers themselves.

The same argument should not stand anymore in support of centralised examining as well as developmental authority after thirty years of political independence. The university administrators today are again raising the bogey of "difficulties" of colleges for accepting autonomy, while talking all the time about raising standards and improving quality. Some of these administrators are perhaps the very persons who have fought against the British, but are using the same argument, against college autonomy.

The colleges, their managements, principals, teachers and students should accept the responsibility of their own development through the councils, examinations being really a minor matter in the whole process of quality education. No quality education is possible unless the teachers and students are free to study, discuss, and talk.

The government should also support whole-heartedly, this new concept, even financially if required, in order to implement their own paper policies since the generation of an enthusiastic participating concept at the district colleges level can be achieved only through such a new, active and voluntary functional mechanism. □

Science in Services to Agriculture

Excerpts from the Lal Bahadur Shastri Memorial Lecture delivered by Dr. Ralph W. Cummings at IARI, New Delhi.

India has moved forward on a broad front. It was and is primarily an agricultural country. And it was determined to modernize and bring science to bear on rural problems. Social justice, including some of the recognized injustices inherent in its caste system were being addressed. The basis was being laid for industries to provide the infrastructure for overall development and supplies of goods and services needed by its people. Village organizations were being developed which kindled in its people a fuller realization that they could do something by their own efforts about the lot in life to which they were born. India appeared to be a nation which was, in an exciting way, youthful in outlook and willingness to innovate but with a very rich cultural background extending over many centuries.

The first two items to receive priority attention under our agreement were the national maize improvement scheme and the Post Graduate School of Agriculture at the IRRI. The expatriate contributions to both were small. Most of the ideas and their implementation were the product of Indian effort. We foreigners did, I hope, provide a small element of continuity of focus of attention to them, and perhaps may have provided some of the small elements which helped to expedite their execution and overcome some of the discouraging delays and handicaps. And I hope that we helped a little in giving more respectability to the idea of having the more senior scientists participate actively in field experimentation and become more intimately familiar with the materials and technological practices for whose improvement they were responsible.

During my first months at the IARI, I was able to talk with staff in all departments of the Institute concerning the postgraduate plans and the things we hope to accomplish. There was no disagreement that we were all determined to build a centre of excellence which could impart training for M.Sc. and Ph.D. degrees of a quality that would be second to none anywhere in the world. I think this is still your aim. We were convinced that such a programme would need to have a broader inter-disciplinary base of organized study than had been common practice and that it must include active and successful research, and at least at the Ph.D. level, the generation of new and original ideas. There was no model anywhere in the world which we could implant directly, and so we set about developing one which would be suitable for India. Several successive drafts were prepared before we were satisfied.

At this point, however, it was recognized that the plan represented an important break with the traditional procedures of Indian universities. There

was real doubt that it could be implemented within the structure of the existing universities. When the problem was presented to the University Grants Commission, a group including the Chairman made its assessment and gave the Institute independent authority to grant degrees and police the standards thereof. The Post Graduate School was launched in October, 1958 with its first batch of 150 students.

Now let us turn for a moment to the National coordinated maize improvement scheme. A team had been invited in 1954 to India to review maize research and production in the country. Maize was a relatively minor crop except in limited pockets. The team called attention to some substantial weaknesses in research with the crop and made some specific suggestions. Being aware of the Rockefeller Foundation experience with this crop in Latin America, the GOI had requested, in its agreement, assistance in research on the improvement of this crop. Since maize was a relatively minor crop, the number of research workers with strong vested interests was small, and innovations could be introduced with little opposition and concern.

The Maize Improvement Scheme, worked out in consultation with scientists at IRRI and ICAR, called for a national coordinator, four main stations—IARI, UP, Andhra Pradesh and Kashmir, with an inter-disciplinary staff and certain basic facilities including equipment for seed processing equipment and storage, land preparation, plot experimentation, at each, and for nine sub-stations with more limited staff and facilities. It provided for staff training, planning workshops, field visits across stations, importation and free exchange of germ plasm and experimental results, testing of materials on a comparable basis across the various stations, joint sharing and publication of results, and generally a team effort. This provided some contrast to the individually conducted and reported experiments previously carried out.

Within the short space of four years, four hybrids which with changes in production practices, proved highly productive and widely adopted across the northern plains and the Deccan, were developed and ready for release. These contained germ plasm from diverse sources including parents of Indian, North American and Latin American origins.

The rather striking productivity of the techniques introduced through the Coordinated Maize Improvement Project was recognized by the ICAR, which soon adopted this as a pattern for organization and support to a long list of national coordinated schemes on other commodities and problems of common interest and concern across several states. In fact, it became a major basic pattern for ICAR support to agricultural research in the states.

When applied to wheat, with the close cooperation with the International Centre on Maize and Wheat Improvement, the whole character of the wheat varieties used in the country and the technology of wheat production has undergone a revolution which has few parallels anywhere. In the short space of five years from 1966-71, total wheat production more than doubled and has continued to rise.

This brought in its train many other innovations in agricultural production, harvesting, thrashing, etc. and was a major factor in the rapid increase in small private tubewells which enabled so many farmers in Northern India to greatly intensify their farm enterprises.

Rice is grown under a much wider variety of ecological conditions in India than is wheat, is somewhat more of a smaller farmer enterprise, and beset with more pest problems than is wheat. It is grown in more than one season with substantial variations in light intensity. Nevertheless, the network of rice research in India now embraces more than 100 research stations, major national research centres at two locations (CRRI, Cuttack; and AICRIP, Hyderabad). Close cooperation has been established with the International Rice Research Institute. India is steadily increasing its list of new varieties capable of raising rice yields in an increasing proportion of the various ecological situations encountered across the nation, is finding better ways of overcoming the host of parasites and diseases to which the crop is subject, is improving its ability to control the water levels required, is learning how to get better efficiency from the fertilizers used. And the total rice production of the nation is increasing steadily and very substantially.

These are only a few of the very large number of very worthy achievements of India's agricultural establishment which could be cited. By the early 1960's, it was evident that modern agricultural science could, and in fact was, making very notable contributions to agricultural improvement. It did not need to be considered as one of those things government is supposed to support but was more and more viewed as an absolute essential on which progress depends. And with this, the prestige of the agricultural scientists was rising.

The first agricultural university was established at Pantnagar in U.P. during the second five-year plan. Six more came into being during the third plan period. The over-all pattern, which developed during the early 1960's provided for these state agricultural universities, generally, to have statewide responsibility for research and higher education in agriculture and certain phases of extension work, especially that portion which would assure relevance of the research to the real needs of agriculture and transfer of technology in a manner that would assure relevance and applicability to on-farm problems. In many cases, extension specialists for liaison between the researchers and staff of the agriculture and animal science departments have been provided. Agriculture is broadly defined to include crop sciences, animal sciences, rural social sciences, home science, agricultural engineering, etc. The agricultural universities are essentially state institutions but central support comes to them through the ICAR, under specified standards, for a number of purposes including physical facilities, salary scale upgrading, libraries, etc. The central support to coordinated research schemes and special research projects also comes to them through the ICAR.

Some of the earlier innovations and major ad-

vances in agriculture were most applicable to the areas of the country in which moisture supplies were favourable—irrigated tracts, areas of assured rainfall, etc. This was part of a deliberate strategy and sequence. These were the kinds of areas in which progress could be achieved most rapidly and the evidence of advance could be demonstrated most dramatically. It was recognized that successful innovations were necessary to demonstrate the possibilities. But Indian leadership was determined that all the people must be served—not just the more favoured areas. But the many people who wrest their livelihood from the soil in areas where rainfall is more limited and less dependable were not forgotten not from the very beginning. As soon as real and substantial advances were assured in the more favoured areas, attention was turned to the more difficult conditions of the semi-arid and seasonally dry areas.

The All India research scheme on dryland agriculture with its well selected leadership and staff and twenty-four stations strategically located throughout the nation should be singled out as a major effort in this direction. The larger pilot schemes associated with many of these were designed to hasten the application and proving of promising technological elements.

In 1972, the International Crops Research Institute for the Semi-Arid Tropics was established at Hyderabad. The international community thus joined with India in developing a centre dedicated to the development of crop varieties and production practices which could substantially improve the level of production and the stability and dependability of production of rainfed farms throughout the semi-arid regions of the world.

India has indeed moved forward to a position of real leadership in the world arena of agricultural research and agricultural improvement. Its scientists and its institutions are playing increasingly strategic and significant roles in developing countries around the world.

A quarter of a century ago, India was more or less perennially short of basic foodgrains to feed its people. Its population was then well under 500 million. Today its population is said to exceed 660 million people and is still increasing at over 15 million people each year. A population approaching if not exceeding 1000 million is a strong probability by the end of the century. Some decrease in population growth rate is apparent but the requirements in prospect for a still rapidly growing population are formidable indeed. India is now in a very favourable position with its food grain supplies and reserves. It will take a continuing sustained effort to maintain such a favourable situation especially in view of the fact that we cannot expect whether to average out quite as favourably as it has during the most recent five years.

There is less need for approaches based on narrow selfish interest and greater need for rallying behind causes which are loftier and directed toward the development of a strong nation in which all people can find a place for expression of their best talents. □

Educational seminar on international economic order

Delivering the valedictory address at the international seminar on contribution of education to the establishment of new international economic order held recently in New Delhi, Dr. P.C. Chunder, Union Education Minister stressed the need for continuous emphasis on humanistic values to raise the quality of life. Inequalities would continue without education being given greater importance in any international economic order. Dr. Chunder said that education should help a person meet his physical needs as well as raise his moral and emotional values. He said the new international economic order could succeed in removing disparities and injustice if it was given moral and spiritual content.

The seminar has called for greater distributive justice in the

dress made a suggestion for imposition of United Nations tax on countries with per capita income above a certain level for distribution among developing countries to meet their basic need. He felt international economic order could not be established unless the economic monopoly of the developed countries was broken. The real link between the new international order and education system was though university or higher education which was the source of creative power for economic and manpower planning. Dr. Sethi said that developing countries would have to reorient their educational pattern to reduce the pressure of prevailing international order on their system.

The seminar was attended by educationists, economists and sociologists from nine countries. Its sponsors included National Staff College for Educational

that evaluation should also test the teaching effectiveness. The Commission has expressed concern at the growing unemployment of the educated, unplanned expansion and proliferation of new universities and colleges which had led to dilution of standards. The Commission is of the view that higher education should be radically changed and adapted to the needs of developing society. It calls for adopting measures which will reduce pressure on the university system. The Commission has favoured delinking of jobs from degrees and changing the recruitment system. It has emphasized the need for proper planning in the location of new institutions which should be set up on sound academic considerations. The policy of selective admission to full time institutions of higher education has been recommended. The Commission has suggested an expansion in the facilities for non-formal education including correspondence and self-study courses.

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share of resources. The flow of aid for education and development research has been recommended to be increased both in quantity and quality to support the national efforts. The consensus at the seminar was that education should help bring about a change in the value system to ensure removal of inequality and injustice. The participants felt that education meant not merely schooling but life long learning process including aspects of informal and non-formal education. It was suggested that education programmes should be need-based to make it relevant, meaningful and functional. Education was defined to provide knowledge for agriculture, industry, health and civic participation. Education should enable the people to organise themselves against exploitation. A decentralised system of planning and administration of education was proposed at the seminar.

Dr. J. D. Sethi, Member of the Planning Commission in his ad-

Planners and Administrators, International Institute for Educational Planning, Paris and the UNESCO Regional Office for Education in Asia and Oceania.

UGC suggests changes in education system

The University Grants Commission in its recent communication to the Union Education Ministry has suggested that not more than three public examinations be organised for the entire course of education till the end of undergraduate stage. There can be a district examination at the elementary stage with a view to ensuring uniformity of standard among various institutions. The Commission is of the view that barring three public examinations, all other examinations should be internal. A system of continuous sessional evaluation should be attempted to see the progress of students and special attention should be given to those not showing adequate progress. The document stresses

BHU seminar on pharmaceutical education

Dr. Hari Narain, Vice-Chancellor of Banaras Hindu University inaugurated the seminar on pharmaceutical education in India—retrospect and prospects held recently at the University Campus in Varanasi. He said that the new graduates should be oriented to meet the needs of society. The Vice-Chancellor said that the recommendations of the seminar in the field of pharmaceutical education in the country were being looked forward by the university authorities. Dr. S. Prasad, Chief Guest at the seminar stressed the need for re-shaping the syllabi of pharmacy graduates. He traced the history of pharmaceutical education in the country and mentioned the vital role played by pharmacy graduates in the service of the community. He emphasised the need for fruitful collaboration between the pharmaceutical sciences and industries. He said full-fledged faculty of pharmaceutical science should be instituted at the university to meet these developments.

National policy on education

Dr. P. C. Chunder, Union Education Minister said recently in New Delhi that national policy on education will be announced in the budget session of Parliament. The policy would aim to cover the largest number within its ambit. The approach would be entirely pragmatic without any kind of dogmatism. The emphasis would be on education at lower level with universalization of elementary education and massive programme of adult literacy. The policy would aim at reducing the load of books, greater emphasis on vocational education, socially useful work and reintegration of culture to make education relevant. Dr. Chunder said that the Government will discourage the establishment of new universities and colleges as well as construction of luxurious buildings to check the unfruitful expenditure. The policy will lay stress on the use of regional languages as medium of instruction at higher level. The Union Minister said the shift to the regional language medium at the university level would be gradual and efforts would be made to get the text books ready in different languages. The regional languages were sufficiently developed to be used as effective medium of instruction. Dr Chunder said that English will not be neglected and continue to be taught as a subject of study.

Madurai announces open university programme

Madurai Kamaraj University has announced its Open University programme under which persons without formal education can qualify themselves for a degree. Persons of twentyone years age and above are eligible to join the programme. The course is open to any citizen residing in Tamil Nadu and Pondicherry. Degree course will be conducted through correspondence by the Institute of Correspondence Course and Continuing Education of the University. Postal tuition will be imparted through the medium of Tamil. Details of the courses can be had

from the Director of Open University System.

Radical changes in education suggested

Speaking on the 'new international economic order and its consequences on education' at the Institute for Social and Economic Change in Bangalore, Prof. Michel Debeauvais, Director of the International Institute for Educational Planning, Paris stressed the need for radical transformation in education in the developing countries in conjunction with reforms in social and economic field. He said though education formed part of the programme for achieving the new world economic order, it could not by itself bring equality even when it was equally distributed. It would have little impact on income distribution and job opportunities. He said the present system of education had been found to be detrimental to equality as edu-

cation had led to international division of labour and contributed to the international community of elites. Prof. Debeauvais said transformation of education system had been necessitated by circumstances. The IIEP had decided to adopt a new educational strategy to contribute to the economic equality of the world. The Institute would also establish working relations with similar educational institutions in the developing countries to learn from their experience and evaluate strategies to suit their needs. He said India had great role to play in sharing her experience and philosophy of education with other developing countries. He pleaded for active participation of Indian scholars in international educational organisations and institutions. Prof. V.K.R.V. Rao, Chairman of the Board of Governors of the ISEC gave a brief account of the new world economic order adopted by the United Nations.

Educational Innovations: BITS Case Study

(From our Reporter)

As part of the celebrations of the Founders Day of the Birla Institute of Technology and Science, a seminar on Educational Innovations: BITS Case Study was organised on February 3, 1979 at Pilani. Apart from faculty and students of BITS, participants were drawn from industry, the professions the UGC and the Association of Indian Universities. Dr. B. Ramachandra Rao, Vice-Chairman of the UGC, was elected to preside over the seminar.

Initiating the discussions, Dr C. R. Mitra, Director of the Institute, gave an 'anatomy of innovation'. Innovation, he said, "connotes a meaning of 'to come upon' and is to be understood in the context of a system, an organisation, a society or a way of life." "The process ... is one of continuing adaptation and change of configuration." It is "a dynamic process of a unity of movement where change begets change; where the means are not mere tools waiting passively to be used but a technical ensemble that demands routinized behaviour".

Dr V. Krishnamurthy, Deputy Director of the Institute, in his keynote speech sampled the exercises undertaken at the Institute before an innovation was put into practice.

Various speakers from the Institute gave a bird's eyeview of the different areas in which innovations were introduced at the Institute. These areas include the academic structure, admission process, registration, scheduling and assessment, linkages with industry, foreign collaboration, teaching workshops, course development, admi-

nistrative restructuring, recruitment and development, etc. The entire thrust appeared to be towards flexibility, the needs of the system and the needs of the clientele, namely the student and the society. The academic structure at BITS, for example, is such where provision was available for both lateral and vertical mobility. The courses formed a cohesive chain with the first three years of the five-year degree course consisting of a broadbase of subjects. Coursewise promotion was possible at BITS. One could do a dual degree.

Likewise admissions to courses of students with marginal deficiencies or with advanced standing was possible. Since there was no separate admission examination and as students were drawn from different parts of the country, a procedure had been evolved for normalising the results of Secondary Board examinations. The Institute will be launching on an M.E. collaborative programme with effect from July 1979.

200 courses were offered every semester. Students could proceed with their studies at their own speed. Course handouts including test schedules were given to each student within the first week of their registration. There was also an Academic Counselling Board which has the right of asking a student to leave the Institute if the performance was not found to be satisfactory. The time-table at the Institute is a coursewise timetable and not a classwise one.

About 800 students and 60 faculty members of BITS are out every year in 80 industries for what is known as the Practice School. This concept needed evolving of new teaching techniques. It provided linkages of research with industry and also initiation of consultancy activities. The process involved and the administrative structuring at the Practice School were detailed upon.

Foreign collaboration was always prestigious and glamorous but to be beneficial to the receiving institution lot of work needed to be done. BITS has demonstrated that it is possible to choose the experts under the foreign collaboration programme. Also, choose its own people, for exchange programmes and it chooses its own equipment and determine where to buy. All this needed advance preparation.

To initiate the new teachers and better the classroom personality intensive teaching workshops are organised.

Course development was a continuous process at BITS. The main emphasis was on retaining internal consistency of the courses. For example, the Institute has a course on Concept of Science. Three students of the Institute have written a book for this course.

To sustain all these innovative practices, the administrative structure of the Institute had also to be suitably oriented. Almost the entire decision-making process and its centres are with the faculty. It is an entirely functional administrative structure. There are no departments at BITS.

Summing up, Prof. T. S. K. Iyer, Deputy Director at the Institute, presented a total picture of what it all meant and where the institution liked to move from thereon. He wanted a cell for educational research and institutional development to be established at BITS.

In the discussions that followed in the afternoon session, emphasis was on various aspects of examination reform and the orientation to be given to the Practice School concept.

Replying to the discussions, Dr Mitra pointed out that in all the various facets presented in the seminar the students' role in innovation at BITS was not getting highlighted. This did form a good part of the whole process. He said that means had to be a part of the human and material ensemble available.

In his presidential observations, Dr B. Ramachandara Rao suggested the organisation of a National Workshop on the Practice School and the starting of a journal to publish the work being done at the Institute for the purpose of disseminating information to a wider audience.

Panjab Varsity organises course on instrumental analysis

The Department of Chemistry of Panjab University conducted recently an advanced course in 'instrumental analysis' which will benefit the Indian laboratories to use automatic analyser devices to speed up investigative processes in the fields of medicine, agriculture and industry. The Hungarian Cultural Relations Institute in Budapest had deputed seven member team of faculty members from their universities and representatives from industry to aid the course.

Prof. R. C. Paul, Vice-Chancellor of the University said that the visiting team had brought with it a set of highly sophisticated and expensive instruments for demonstration purposes. These instruments were in use in some of the European countries for conducting blood and urine analysis. The instruments could also analyse soil samples to help farm scientists determine the quality of fertilisers to be used to achieve the maximum output. The team had brought with them several electronic instruments. Prof. Paul said the Central Scientific Instruments Organisation in India had the capacity to manufacture such instruments but the country had to go a long way in the instrumentation technology. The use of automatic analysers in agriculture had enabled Hungary step up production.

Prof. E. Pungor, leader of the Hungarian team said that much of research in industrial processes was conducted in his country on the basis of suggestions made by the industry. He said his country was exporting sophisticated scientific instruments to various countries in the East and the West.

Plea for promotion of epigraphical research

Dr. P.C. Chunder, Union Education Minister inaugurated recently the fifth annual congress of the Epigraphical Society of India in Bangalore. He called for active participation of universities and other agencies for furtherance of

epigraphical research in the country. Dr. Chunder suggested that expertise of scholars who were either employed or retired could be utilised for conducting the training programmes to overcome the existing dearth in the field. The Union Minister said that colleges should involve themselves in popularising epigraphy by setting up galleries and museums in rural areas. This would help villagers to identify themselves with the work of finding and preserving epigraphical material. Dr. Chunder called for a cumulative effort to see that precious epigraphical material was not lost to posterity.

Dr. Z.A. Desai, Director of Epigraphy Unit of Archaeological Survey of India suggested that decipherment of inscriptions and their study should be included in the curriculum of language courses at undergraduate and postgraduate levels. He said a scheme involving fifteen selected universities had been formulated to carry out the survey of archaeological remains in villages.

Dr. T.R. Jayaraman, Vice-Chancellor of Bangalore University released the souvenir and assured the congress of assistance from the university to promote epigraphical research in the country. Prof. D. Javare Gowda, former Vice-Chancellor of Mysore University released the journal of the Society.

Andhra plans Gandhian studies centre

The Andhra University proposes to set up a centre for Gandhian Studies. The University has appointed seven member committee headed by the Vice-Chancellor, Shri M.R. Apparow to formulate proposals for starting the course in Gandhian studies. The committee at its recent meeting decided to request the University Grants Commission to sanction the project. The structure and function of the centre would be finalised at the next meeting of the committee scheduled to be held in March. The committee discussed various methods for incorporating Gandhian studies in the university curricula and decided to start the course from

the next academic session. The proposed centre would have courses in Gandhian thought relating to politics, economics and social changes. The Centre would also have courses in appropriate technology besides research on similar areas of Gandhian thought. The committee at its next meeting would also consider provision of such studies at the undergraduate level.

The members of the committee include Prof. R.V.R. Chandrasekhara Rao, Shri M.V. Krishna Rao, Shri G. Lavanam, Dr. B.V. Parameswara Rao, Prof. B. Prasada Rao and Shri Prabhakarji.

ISM reservation for girls students

The Indian School of Mines, Dhanbad, on a suggestion of the Union Education Minister at the golden jubilee convocation, has decided to reserve one seat each for girls students in the five-year duration undergraduate programmes in petroleum engineering, applied geology and geophysics. These students would be required to obtain qualifying marks of fifty per cent at the entrance examination irrespective of their position in the merit list. Girls who have passed the higher secondary examination or the 10+1 stage or the first-year of the intermediate examination are eligible to take the entrance examination. The school offers undergraduate courses in Mining Engg. and Machinery and postgraduate programmes in mineral exploration, mining geophysics, engineering geology, fuel engineering, mineral engineering/beneficiation and industrial management. Its research activities cover the additional areas of Physics, Mathematics and Chemistry.

SNDT organises workshop on adult education

Dr. (Smt.) Madhuri Shah, Vice-Chancellor of the SNDT Women's University inaugurated recently at the campus three-day workshop on involvement of language departments in the National Adult Education Programme. The workshop was conducted to

achieve the twin objectives of identifying situations relating to life of adult learners and developing vocabulary which would render learning meaningful, effective and interesting. A visit to the fishermen's colony was arranged as a part of the workshop. The three groups of the participants listed three to four thousand words which would form basic reading material for the local adults of the area. It was decided as a follow up of the workshop that the groups would meet fortnightly to develop reading material for adult learners, to study long term programmes regarding language structure and linguistics and to explore the possibility of involving M.Ed. students in specific studies to give a fillip to the programme.

IIS faculty improvement programme

The Centre for Continuing Education of Indian Institute of Science has invited applications for award of fellowships under the faculty improvement programme of the University Grants Commission. The fellowships will be awarded to teachers from affiliated colleges for doing research leading to Ph.D. degree in the departments of applied mathematics, molecular biophysics, inorganic & physical chemistry, physics, solid state & structural chemistry. Teachers from university centres and engineering colleges are not eligible for award of these fellowships. Applications will be received by the Indian Institute of Science, Bangalore-560012 by 15th March, 1979.

Commonwealth meet on non-formal education concludes

The Commonwealth Conference on Non-Formal Education for Development concluded recently in New Delhi with a call to member countries to give due recognition to the role of non-formal education in the overall development efforts. It was suggested that non-formal education activities should form an integral part of government strategy for development with the objective of

improving conditions of the poor in the society. Dr. Malcolm S. Adiseshiah, Chairman of the Conference said that the session had helped not only to highlight the role of non-formal education in achieving development goals but also in redefining its scope. He said the programme of school dropouts discussed at the Conference would be of great help to the third-world countries which had little expertise in the field. Dr. Adiseshiah said that an impressive experience and tradition in the area of non-formal education for adults had been built up in this country. The proposal for cooperation among commonwealth countries to accelerate the implementation of non-formal education programme was adopted by the conference. The recommendation for cooperation envisaged the setting up of Commonwealth Educational Research Association. The plan of action for study of this proposal will be placed before the commonwealth education ministers conference scheduled to be held in 1980. The Conference said in the final recommendations that non-formal education should help the target group to understand their social environment, develop their capacities and act effectively to bring about a change for greater equality, justice and harmony.

Call for integrated crop production strategy

Addressing the eighteenth convocation of the Indian Agricultural Research Institute in New Delhi, Shri B.D. Jatti, Vice-President called for an integrated production strategy to achieve the planned target of four per cent growth rate in agriculture. The Vice-President said despite the impressive gains made in food-grain production in the recent years the country was exploiting only a small fraction of production potential that had been created. We needed a greater effort in using scientific techniques of crop production and extending its benefits to the farmers. The impressive work done in production and distribution of improved seeds met only a part of farmers' need at present. The Vice-Presi-

dent said we should be able to organise massive programme for the production and distribution of certified seeds of cereal grains and other crops. The intensive crop production programmes could be sustained with the adoption of plant protection measures by the farmers. Shri Jatti said the plant protection measures were concentrated on irrigated crops. Unless the crop protection measures reached the millions of small and marginal farmers, it would be difficult to achieve the growth rate. He said the organised services in this field were highly centralised and the blocks were not well-equipped to extend the services to the marginal farmer. He suggested a decentralised service to be made available at the village level. The service could also become an important avenue for generation of employment opportunities for thousands of youngmen, to be trained in the use of maintenance of simple machines. The Vice-President stressed the need for efficient and economic utilisation of water resources. He said a greater damage to crops might result from unscientific use of water and unscientific irrigation practices.

Gandhian studies centre at Bihar Varsity

Dr. Shakeelur Rahman, Vice-Chancellor of Bihar University said recently in Patna that a Centre of Gandhian Studies will start functioning in the University from the next academic session. The Vice-Chancellor announced that a number of other schemes were being taken up for development of the university. The proposal included the introduction of M.Phil. courses and arrangements for coaching in foreign languages from the next session. Dr. Rahman said the university had submitted proposals to the University Grants Commission for starting journalism courses. It was proposed to construct a new building to house the Ram Chandra Shahi Museum in which important relics and art treasures of the Ashoka period would be preserved and displayed. Dr. Rahman said construction of an auditorium and a girls hostel were

also being taken up by the university.

Kurukshetra varsity plans democratisation of university bodies

The Executive Council of Kurukshetra University at its recent meeting approved the amendments to the statutes relating to composition of university court, academic council and board of studies in order to democratise the university bodies and make them broadbased. The proposals will now go to the university court and the Chancellor for their assent. The university court under the proposed amendment will include Principals, teachers and students' representatives. The Academic Council will also have students' representatives but they will not have the privilege to participate in the deliberations relating to appointment of examiners. The Board of Studies will have the increased strength of teacher representatives of undergraduate classes.

The Executive Council of the university approved an ordinance for constitution of staff councils and departmental committees in the university teaching departments. The group insurance scheme for the benefit of staff who will be deputed on supervisory and flying squad duties at the time of annual examinations was sanctioned. The proposal for introduction of health and physical education as one of the elective subjects at the pre-university and degree courses was also approved by the Council.

Call for use of Hindi in Varsities

Dr. P.C. Chunder, Union Education Minister while addressing the meeting of the Education Ministers and Vice-Chancellors of Universities in the Hindi speaking States called for speedy measures to promote the use of Hindi as the medium of instruction for higher education. Dr. Chunder said that one of the problems being faced by students was that after their studies through the medium of Hindi they had to pursue higher studies in English. He said a time bound programme for introduction of Hindi as medium

of instruction in universities should be devised. He pointed out the books produced by State Granth Akademies were not included in university libraries. It was suggested that each university should set up a sales counter to act as an agent of granth akademies. The universities should also reserve a part of their library grant for purchase of these books. It would be possible under the revised scheme of university book production to introduce books which will be directly related to the courses.

Madurai workshop on biological-oscillations

The School of Biological Sciences of Madurai Kamaraj University recently organised a workshop on Biological Oscillations which was the first of its kind to be held in the country. The workshop was inaugurated by Prof. Erwin Buening, an authority on biological rhythm research who delivered a special lecture on evolution of circadian organisation from unicellulars to Vertebrates. The participants were divided into groups and assigned the following experiments which were simultaneously offered by the teachers:

- Circadian rhythmicity in conidiation of fungus
- Sleep movement rhythms of cotton plants
- Locomotor activity rhythms in cockroach and squirrel
- Flight activity rhythms in bats
- Circadian rhythms in rectal temperature and human activity
- Rhythms in leaflets movements of Desmodium (Chemical Oscillations)

Prof. L. R. Ganesan of Madurai College initiated discussion on mathematical analysis of biological rhythms and Dr V. Nanjundiah led discussion on the kinetics of chemical oscillations. A manual describing the experiments offered in the workshop is proposed to be published by the School of Biological Sciences.

The participants to the work-

shop included medical researchers and teachers from the various universities, Indian Institute of Science as well as Bonn University and University of Edinburgh.

Seminar on language learning

While addressing the seminar on language learning in multi-lingual Indian context held recently in New Delhi, Prof. Satish Chandra, Chairman of the University Grants Commission said that the country could not depend on a foreign model and should devise her own techniques to impart functional ability in languages.

Prof. R. C. Mehrotra, Vice-Chancellor of Delhi University, stressed the need for making regional languages more functional to meet the requirements of science and technology.

Prof. R.N. Srivastava, Head of the Linguistics Department in Delhi University said the seminar would seek to give a social content and meaning to language teaching and also find answers to the problems of functional language learning. Dr. Gopal Sharma, Director of the Central Institute of Hindi said language teaching should not be mixed with culture which would lead to social tensions and problems. The object of language learning should be simply to acquire the power to communicate.

Management study on animal energy

Prof. N. S. Ramaswamy, Director of the Indian Institute of Management, Bangalore, has said in his recent study that animal energy in the country is not being utilised to the optimum level. The country has about eighty million work animals providing energy equivalent to approximately forty million horse power. This energy is four thousand MW more than the present installed capacity of electrical power in the country. The total replacement of animal energy might cost the country a massive amount of thirty thousand

crores. Prof. Ramaswamy has said that potential animal energy was being lost during life span of the animal due to lack of care and veterinary advice. He has suggested the formation of Energy Resource Corporation to take full advantage of the available animal energy in the country. The Corporation should study all aspects of work animals, their use, methods of application, foods and nutrition, better breeds, power and life span.

The Institute of Management is expected to submit its report on the study on techno-socio-economic aspect of the bullock cart by June next. The Institute is also carrying a study on rural roads and redesigning of bullock cart.

54th Annual Meeting of AIU

On the occasion of the 54th annual meeting of the Association of Indian Universities, the foundation stone for the AIU House will be laid by Dr. P.C. Chunder, Union Minister for Education & Social Welfare on March 7, 1979 at 9.00 a.m. at Plot No. 16, Kotla Marg, New Delhi.

The annual meeting will be held on 8th and 9th March, 1979 at the Punjabi University, Patiala.

Plea for Sanskrit research in university

The World Sanskrit Conference recently concluded in Allahabad had suggested that Sanskrit teachers should be appointed in all colleges and efforts should be made by universities to facilitate research in various subjects in Sanskrit. Study of Sanskrit has been recommended as a compulsory subject from primary to higher secondary stage. The conference was inaugurated by Shri Dayanand Basant Rai, Mauritius Minister for Industries and Commerce who said that the Government of India would provide the encouragement to Mauritius for propagation of Sanskrit.

AMU organises ethology meet

Dr. A.M. Khusro, Vice-Chancellor of Aligarh Muslim University while inaugurating the eighth annual conference of the Ethological Society of India at the university campus said that all achievements in science were based on an attitude of healthy doubt and free enquiry. Tolerance to difference of opinion, an essence of democracy was a product of scientific attitude. Dr. Khusro urged the scientists and the young researchers to select subjects for their research which were of social relevance. He appealed to them to strive to improve the research standards for better achievements. Dr. Khusro said that of the six hundred theses accepted by the university, three hundred sixty were from the science faculty.

Bombay plans college development council

Prof. Ram Joshi, Vice-Chancellor of Bombay University said recently that the university will soon set up the College Development Council to provide effective academic guidance to colleges in mofussil areas. The council will comprise heads of departments, principals and representatives of teachers and state government. The council will have membership of about fifteen persons initially but academics from mofussil institutions will be given liberal representation in due course of time. The Vice-Chancellor said the activities of the council will be financed by the University Grants Commission for the first three years. The council will ensure uniformity of standard in the city and mofussil colleges and pay adequate attention to the latter's peculiar problems. The council will provide constant guidance and advice on academic and financial management to these colleges. Prof. Ram Joshi said the council would conduct workshops for the teachers from mofussil colleges to undergo orientation programmes. There would also be greater interaction between the urban and rural colleges as senior faculty members from the cities would be deputed periodically in order to

improve the academic standard of these institutions. Adequate attention will also be given by the council to provide textbooks in regional languages to help these institutions develop academically. The council will assist the colleges to prepare a long term perspective plan for development.

Zonal workshops on physical education

Shri R.L. Anand, Director of National Institute of Sports, Patiala, said that it was proposed to hold zonal workshops under the auspices of University Grants Commission to impart scientific knowledge in theory to faculty members of physical education colleges and the university teaching departments. The Institute would also organise an international hockey symposium in Patiala for referees, and senior coaches to familiarise them with the change in the rules of the games. Shri Anand said that the NIS eastern centre would start functioning at Rabindra Sarobar, Calcutta by July. The State Government had agreed to acquire the Sarobar complex and transfer it to the Institute shortly. Shri Anand further said the All-India Football Federation had decided to award twenty scholarships every year to talented rural players and donate a rolling trophy to the winning team in the all India rural sports programme. The Government of Federal Republic of Germany had offered sixty scholarships covering seventeen different games and allied subjects.

IKS Vishwavidyalaya organises seminar on art education

The Faculty of Painting of Indira Kala Sangit Vishwavidyalaya, Khairagarh, organised a seminar on art education, evaluation, and reform recently. Renowned artists holding teaching positions in the various art colleges and universities participated in the seminar. The discussions related to art education in pre-independent period, present India and the future of educated artists. The seminar was

sponsored by the University Grants Commission.

Garhwal introduces journalism course

Dr Uma Charan Ghildyal, Vice-Chancellor of Garhwal University said in Dehra Dun recently that the university will reintroduce journalism course from the next academic session. The course would be of nine months duration. The Vice-Chancellor said besides academic background aptitude for journalism would be the main criteria for selection of students.

Gift for inter-varsity sports winners

The Panjab University Women Sports Council at its recent meeting held in Chandigarh decided that women players of the university who had secured any of the first three positions in the Inter-University Competitions will be honoured on the concluding day of Annual Athletic Meet. The winners will be given gift cheques. Twelve basketball players and sixteen hockey players will receive the gift.

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A list of Doctoral Theses Accepted by Indian Universities

PHYSICAL SCIENCES

Mathematics

1. Bhatnagar, Veena Lata. Some waiting time models. Meerut University.
2. Goel, Chandra Kant. Some studies in bitopological hyperspaces. Meerut University.
3. Indumathi, V. Characterisations of proximal subspaces of finite codimension in general normed linear spaces. University of Madras.
4. Kar, Bharat Kumar. Some problems on elastic waves in layered media. Indian School of Mines, Dhanbad.
5. Sharma, Santosh Kumar. Reliability evaluation studies in operations research. Meerut University.

Statistics

1. Bansal, Brij Nandan Lal. Stochastic processes in radiation biology. Meerut University.
2. Fauran Singh. Sequential approach to sample surveys. Meerut University.
3. Rajarshi, Manohar Bhagwan. Some statistical and probabilistic studies of dependent random variables. University of Poona.
4. Saksena, Vishvamber Nath. Studies in Markovian deterioration of a structure and some point process. University of Poona.
5. Sharma, Kaushal Kishore. On the estimation of true score and reliability for mental tests under different sampling models. Meerut University.
6. Srivastava, Arun Kumar. Sampling from dynamic populations. University of Delhi.

Physics

1. Ashok Kumar. Collision of electrons by atoms and molecules. Meerut University.
2. Choudhury, Amulya Chandra. A study of spallation hyper nuclei. Gauhati University.
3. Deshpande, Vijay Chintaman. Vibrational spectral studies of polyatomic molecules from Raman and infrared spectra. University of Poona.
4. Goel, Asha. Vibrational properties of solids. Meerut University.
5. Kane, Sandhya Ashok. Study of auger electron energies for lithium (3) to uranium (92). University of Poona.
6. Kanetkar, Subhash Madhusoodan. Mossbauer and X-ray spectroscopic studies of cubic spinel compounds. University of Poona.
7. Kulshreshtha, Daya Shankar. Study of meson resonances and nucleon structure in a quark confining potential model. University of Delhi.
8. Lahoti, Suresh Shrivallabh. Study of Cerenkov radiation in isotropic and anisotropic media. University of Poona.
9. Mohapatra, Bimal Prasad. Electroproduction, photoabsorption and proton-neutron mass difference in an analytic model of virtual Compton amplitude. Utkal University.
10. Pande, Madan Kumar. Studies on microstrip circuits with special reference to thin film Bi_2O_3 overlay. University of Poona.
11. Phatak, Kiran Ajit. Corrosion studies of vacuum deposited aluminium, silver and tin films by ellipsometry. University of Poona.
12. Ramchander R.B. Systematic study of X-ray diffraction of polycrystalline materials. Osmania University.
13. Risbud, Asmita Anil. Effects of alternating electric field on Cerenkov radiation. University of Poona.
14. Sharma, Gyan Shyam. Studies on some physical properties of buffalo milk and its products. Meerut University.
15. Srinivasan, G.M. Contribution to the study of the internal pressure of liquids and liquid mixtures. University of Madras.
16. Verma, Balesh. Space and angle dependent study of neutron wave propagation in beryllium oxide and beryllium. University of Delhi.

Chemistry

1. Arur, Prabhakar Vithalrao. Potential antitubercular compounds: Substituted thiourea derivatives. University of Poona.
2. Aswatha Narayana Murthy, Ramaswamy. Studies in polysulfides: (a) Synthesis of thiol monomers and polymers therefrom, and (b) Synthesis of organothiosilicon compounds for evaluation in polyvinyl chloride. University of Poona.
3. Bhattacharyya, Subhasbandhu. Structural studies on immunologically specific polysaccharide material of pneumococcus type IX. University of Calcutta.
4. Bhide, Sunanda Narhar. Studies on alkyl or aryltin (IV) and tin (II) substituted oxinates. University of Poona.
5. Bhunia, Durgasankar. Studies on the effect of partial replacement of CaO by BaO and SrO on the hydraulic cements of fixed alumina content. University of Calcutta.
6. Chakraborti, Ashokkumar. Studies on dehydration-rehydration behaviour of vermiculite in relation to exchangeable cations. University of Calcutta.
7. Das, Asokkumar. Studies on metallic complexes of some heterocyclic ligands. University of Calcutta.
8. Das, Vijay Ketan. Behaviour of electrolytes in mixed solvents. Utkal University.
9. Jadhav, Pratap Dhondopant. Studies on some metal complexes. Marathwada University.
10. Kadam, Subhash Dnyanadeo. Kinetics and mechanism of oxidation of inides by peroxydisulphate. Shivaji University.
11. Kalkote, Uttam Ramrao. Substituted arylhydroxamic acids: A study. Marathwada University.
12. Khanra, Ardhendusekhar. Synthetic studies on terpenoids. University of Poona.
13. Kogekar, Ramesh Gopal. In-vitro studies on the biosynthesis of penicillin: The mechanism of joining the side-chain acids to 6-amino-penicillanic acids. University of Poona.
14. Mahapatra, Bipin Bihari. Studies on metal complexes containing different nonbonding shells: Co (II), Ni(II), Zn(II) and Hg(II). Sambalpur University.
15. Malik, Gajai Singh. Studies on the mixed ligand complexes involving ligands of biological importance. Meerut University.
16. Mathur, Keshav Chandra. Physico-chemical studies of some pyrazolone complexes with heavy metal ions. Meerut University.
17. Mehta, Suman. A study of coumarins oxygenated in pyrone ring and synthesis of some naturally occurring coumarins. University of Delhi.
18. Mittal, Sri Gopal. Stereochemical features vis-a-vis spectral and magnetic data of some metal complexes of nitrogen and oxygen donor ligands. Meerut University.
19. Mohanta, Hrudananda. Coordination complexes of uranium and thorium. Utkal University.
20. Nageswara Rao, Anipindi. Studies on substitution reactions of some chromium (III) complexes. Andhra University.
21. Nanewar, Rajeshwar Rao. Studies on synthesis and analytical application of hydroxamic acids. Ravishankar University.
22. Nejkar, Appasaheb Dhondiba. Studies in metal chelates of some lawson derivatives. University of Poona.
23. Padhi, Sarat Chandra. Mechanism and structure of some organic reactions. Berhampur University.
24. Pal, Mira. Kinetics of substitution of aquo ligands from cis-diaquobis (ethylenediamine) cobalt (III) ion by bidentate ligands in water ethanol mixture. University of Burdwan.
25. Patil, Bhanudas Totaram. Studies of decomposition and annealing of resulting damages in gamma irradiated chlorates. University of Poona.
26. Pawar, Viththal Balvant. Mechanism of Hydrolysis of some carboxylic acid derivatives. Shivaji University.

27. Prakash, S.R. Transformations and related studies of polyisoprenoids. University of Poona.

28. Prasad, Sudarsana Damodara. On some problems in adsorption and catalysis. University of Poona.

29. Puntambekar, Shrirang Vishnu. Annealing studies in various bromates and their solid solutions following (n,r) reaction. University of Poona.

30. Ramakrishna, Nemani. Studies on organophosphorus insecticides. University of Poona.

31. Rengaraj, K. Stabilities of copper and uranyl ion complexes of amino acids. University of Madras.

32. Saha Roy, Swapn Kumar. Studies on the electrode behaviour of some ion-exchange membranes. University of Burdwan.

33. Sahu, Sarjya Narayan. Studies in some organic reactions. Berhampur University.

34. Samanta, Chittaranjan. Hydraulic activity and sulfate resistance of portland pozzolanic (portland Surkhi) cements. University of Calcutta.

35. Sane, Prakash Pandurang. Synthesis of terpenoids and epoxides. University of Poona.

36. Sharma, Suresh Chandra. Kinetics and mechanism of oxidation of some aldehydes by t-BuOCI. Meerut University.

37. Singhal, Ram Gopal. A study for the synthesis and characterisation of pure acyl derivatives of glycol ricinoleates and evaluation of their plasticization characteristics for PVC resins. Meerut University.

38. Suryanarayan Murty, Sivaraju. Flavonoids of anacardium occidentale Linn and semecarpus anacardium Linn. Andhra University.

39. Vibhute, Surekha Ganapatrao. Analytical applications of thiosemicarbazones. Shivaji University.

Earth Sciences

1. Dimri, Vijay P. Some applications of information and filter theory concepts to geophysical interpretation, particularly to gravity studies. Indian School of Mines, Dhanbad.

2. Prasad, Chittaranjan. Geomorphological and sedimentological studies in Doon Valley, UP. Meerut University.

3. Srivastava, Gauri Shankar Prasad. Geology and petrology of the coal seams of Jharia Coalfield affected by heat. Indian School of Mines, Dhanbad.

Engineering and Technology

1. Basu, Amitabha. Effect of metallurgical variables on grain size and consequent wear characteristics of metal cuttings of high-speed type tool steels. University of Burdwan.

2. Bhattacharyya, Tapankumar. Chemical investigation of certain medicinal plants. University of Madras.

3. Prusti, Sashi Bhusan. Digital simulation of power system with multiconductor transmission lines. Sambalpur University.

4. Rama Rao, K.S. Optical design of electromagnetic devices. Indian Institute of Technology, Kanpur.

5. Sarma, K.S. Studies on the excitation control of synchronous motor subjected to voltage dips. Indian Institute of Technology, Kanpur.

6. Seetharam, P. Analysis of conoidal shells. University of Madras.

7. Vitkar, P.P. Studies on prediction, reliability and improvement of foundation behaviour on soils. Indian Institute of Technology, Kanpur.

BIOLOGICAL SCIENCES

Biochemistry

1. Biswas, Manika. Synthesis and degradation of amino-sugar metabolic enzymes in yeast. Jawaharlal Nehru University.

2. Ganapathy, V. Studies on intestinal dipeptidases and dipeptide transport. University of Madras.

3. Gopalam, Aradhyula. Biochemical transformations during maturation and flue curing of tobacco. Andhra University.

4. Vijayammal, P.L. Role of some B-vitamins in the metabolism of glycosaminoglycans in relation to atherosclerosis. University of Kerala.

Marine Biology

1. Abdul Azis, P.K. Ecology of retting grounds in the backwater system of Kerala. University of Kerala.

Botany

1. Gupta, Prabha. Morphological studies in the family vitaceae. Meerut University.

2. Hardikar, Kamala Shrikant. Fundamental studies of some Indian rust fungi. Shivaji University.

3. Misra, Malaya Kumar. Phytosociology and primary production of a grassland community at Berhampur, Orissa, India. Berhampur University.

4. Nagamani, R. Morphology and embryology of picea smithiana and Abies pindrow. University of Delhi.

5. Raghava Ram, N.V. Apical meristems and development of lateral organs in araceae. Meerut University.

6. Ranade, Vijay Damodar. Myxomycetes of Maharashtra. University of Poona.

7. Sarkar, Hemendra Kumar. Study of macro and micro-mutations in wheat, triticum species induced by X-rays and chemical mutagens. University of Burdwan.

8. Satish Kumar. Morphological, anatomical and ontogenetic studies in some common species of mours. Meerut University.

9. Singh, Mahavir. Studies on the mode of action of p-Fluor-phenylalanine and chloral hydrate induced haploidization in aspergillus nidulans. University of Delhi.

10. Thri Murty, V.S. Studies on the ecology of xanthomonas oryzae, the incitant of bacterial blight of rice. Ravishankar University.

11. Verma, Rajni. Ecological studies on Kolaras Range. Jiwaji University.

Zoology

1. Bandyopadhyay, Sib Sankar. Interaction between soil factors and soil dwelling oribatid population of West Bengal. University of Burdwan.

2. Gajbe, Uttam Arjun. Studies on some spiders of the family gnaphosidae from India. University of Poona.

3. Gantayat, Sarathi Charan. Studies on some aspects of collagen characteristics in the skin and muscle of the fresh water teleost, ophiocephalus punctatus bloch. Berhampur University.

4. Jayavanthi, N. Teratogenic effects of anticonvulsant drugs. University of Madras.

5. Jha, Yogendra Nath. Morphology and taxonomy of certain cestodes. Awadhesh Pratap Singh University.

6. Madhu Rani. Histological, histochemical and biochemical changes in gonads of a few teleosts through the seasons. Meerut University.

7. Mahajan, Krishan Kumar. Faunal survey and ecology of freshwater ciliated protozoa of Western Himalayas. Meerut University.

8. Padma, T. Studies on the genetic aspects of some eye diseases. Osmania University.

9. Rastogi, Veer Bala. Studies on the brain and cranial nerves of certain freshwater teleostean fishes. Meerut University.

10. Sharma, Dharendra. Studies on the protocephalic neurosecretory pathway and neurosecretory cells of suboesophageal nerve mass and ventral ganglia in rhyzida longipes (Newport). Meerut University.

11. Singh, Kiran. Histological and histochemical studies of some intestinal trematodes. Awadhesh Pratap Singh University.

12. Thatte, Sushma Jayant. Studies on the neuroendocrine system of selected blattaria. University of Poona.

13. Tripathy, Niraj Kanti. Chromosomal studies in fishes. Berhampur University.

14. Veera Raghavan, V. Aspects of reproductive physiology of the earwig Euborellia annulipes Lucas dermaptera. University of Madras.

15. Verendra Kumar. A study on the intestinal transport of few nutrients in two teleost fishes. Meerut University.

Medical Sciences

1. Basu, Jayasri. Effects of administration of L-lysine or L-threonine on ascorbic acid metabolism. University of Calcutta.

2. Basu, Rita. Study of the possible involvement of prostaglandins in the mechanism of uterine evacuation in pregnant rats. University of Calcutta.

3. Kathiresan, Saratha. Studies on human foetal thy-mus. University of Madras.

4. Misra, Vishnu Chandra. Studies on yeast-like fungi with special reference to their association with certain food-stuffs. University of Delhi.

Agriculture

1. Bhujbal, Bhimraj Gopal. Studies on nutrient status of Thompson seedless variety of grapes, *vitis vinifera* Linn. in Western Maharashtra. Mahatma Phule Krishi Viswa Vidyalaya.

2. Mukat Lal. Biochemico-genetic studies on hete-rosis and combining ability in wheat, *triticum aestivum* L. Meerut University.

3. Om Prakash. Nutritional studies in grapes *Vitis vini-*

fera L: Effects of N,P,K on growth yield and quality. Meerut University.

4. Prasad, Jitendra. Influence of soil surface conditions on physical edaphic factors and water use efficiency of wheat crop. Indian Institute of Technology, Kharagpur.

5. Sasidhar, V.K. Studies on the effect of multiple crop-ping on soil fertility and crop yields in wet land. Kerala Agricultural University.

Veterinary Science

1. Agrawal, Mahesh Chandra. Studies on the heterolo-gous immunity in schistosomiasis. Jawaharlal Nehru Krishi Vishwa Vidyalaya.

2. Sethumadhavan, V. Karyology and differential stain-ing techniques of chromosomes of the Indian water buffaloes. Tamil Nadu Agricultural University.

Additions to AIU Library

Aaron, Henry J. *Politics and the professors: The great society in perspective.* Washington, Brookings Institution (c 1978) 185p.

Altbach, Philip G. and Kelly, Gail P. *Education and colonia-lism.* London, Longman (c 1978) viii, 372p.

Baron, Bernard. *Managerial approach to tertiary education: A critical analysis.* Windsor, N.F.E.R., 1978. 103p.

Baxter, Carolyn, and others, ed. *Economics and education policy: A reader.* London, Longman (c 1977) xi, 378p.

Boley, Bruno A., ed. *Crossfire in professional education: Students, the professions and society.* New York, Per-gamon (c 1977) x, 108p.

Carnoy, Martin. *Education is cultural imperialism.* New York, Longman (c 1974) 378p.

Davies, Duncan, and others. *Humane technologist.* New Jersey, Oxford University Press, 1976. viii, 180p.

Dawkins, Richard. *Selfish gene.* New Jersey, Oxford Uni-versity Press (c 1976) vii, 214p.

Deem, Rosemary. *Women and schooling.* London, Rout-ledge and Kegan Paul, 1978. xi, 170p.

De Souza, Luis A. Gomez and Ribeiro, Lucia. *Youth partici-pation in the development process : A case study in Panama.* Paris, Unesco, 1976. 101p.

Dupuy, Rene Jean and Tunkin, Gregory. *Comparability of degrees and diplomas in international law.* Paris, Unesco (c 1973) 75p.

Garg, B.R. *Lala Lajpai Rai as an educationist.* Ambala Cantt., Indian Publications Bureau, 1973. viii, 191p.

Gauld, Alan and Shotter, John. *Human action and its psycho-logical investigation.* London, Routledge and Kegan Paul, 1977. ix, 237p.

Halmos, Paul, ed. *Sociology of science.* Keele, Univerity of Keele, 1972. ii, 226p.

Hudson, Kenneth. *Jargon of the professions.* London, Mac-millan (c 1978) 146p.

Hyde, Georgie D. *Education in Modern Egypt: Ideals and realittes.* London, Routledge and Kegan Paul, 1978. xx, 245p.

Kohr, Leopold. *Breakdown of nations.* Carmarthenshire, Christopher Davies. xii, 244p.

Lawton, Denis and others. *Theory and practice of curriculum studies.* London, Routledge and Kegan Paul, 1978. vii, 303p.

Madan Sarup. *Marxism and education.* London, Routledge and Kegan Paul (c 1978) vii, 224p.

Martin, Garry and Pear, Joseph. *Behaviour modification:*

What it is and how to do it? New Jersey, Prentice-Hall (c 1978) xx, 469p.

Pfnister, Allan O. *Planning for higher education: Background and application.* Boulder, Westview (c 1976) ix, 354p.

Rudduck, Jean and Kelly, Peter. *Dissemination of curriculum development.* Windsor, N.F.E.R., 1976. 111p.

Schafer, D. Paul. *Aspects of Canadian cultural policy.* Paris, Unesco, 1976. 95p.

Sinha, Surendra Prasad. *English in India: A historical study with particular reference to English education in India.* Patna, Janaki Prakashan (c 1978) xvi, 196p.

Skager, Rodney and Dave, R.H., ed. *Curriculum evaluation for lifelong education.* Oxford, Pergamon (c 1977) x, 140p.

Taylor, William. *Research and reform in teacher education.* Windsor, N.F.E.R. (c 1978) 230p.

Unesco. *National science and technology policies in the Arab States: Present situation and future outlook.* Paris, Author, 1976. 214p.

Unesco Institute for Education, Hamburg. *Educational reform in the Federal Republic of Germany.* Paris, Unesco, 182p.

Wadsworth, Barry J. *Piaget for the classroom teacher.* London, Longman (c 1978) xiv, 303p.

Wasi, Muriel. *Living and learning.* Delhi, Datta Book Centre, 1978. 107p.

ASSOCIATION OF INDIAN UNIVERSITIES

Sports Talent Scholarships

Sports Talent Scholarship applications for 1979-80 from university students and national level scholarship holders (awarded by NS NIS, Patiala) who intend joining universities next year are invited on prescribed forms available from the Association office and University Sports Offices. Applications complete in all respect should reach the Sports Board of the Association of Indian Universities, D.D. Upadhya Marg, New Delhi-110002 not later than 30th May, 1979.

CLASSIFIED ADVERTISEMENTS

PUNJABI UNIVERSITY

PATIALA

Advertisement No. 250/PRO/Estt./79

Applications are invited for the following posts:

1. Professor of Zoology

(Rs. 1500-60-1800-100-2000-125/2-2500)

Qualifications

An eminent scholar with published work of high standard actively engaged in research. Ten years' experience of teaching and/or research. Experience of guiding research at doctoral level.

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge.

Specialisation

In any branch of Zoology, preferably in (i) Cell Biology (ii) Developmental Biology (iii) Animal Physiology.

2. Co-ordinator (Training Orientation Centre) (NSS) —One

(Rs. 1200-50-1300-60-1900).

Qualifications

(a) Good academic record with a doctoral degree or equivalent published work. Evidence of being actively engaged in (i) research or (ii) Innovation in teaching methods or (iii) Production of teaching material.

(b) About five years experience of teaching and/or research provided that at least three of these years were as Lecturer or in an equivalent position. This condition is relaxable in the case of candidates with outstanding research work.

(c) Candidates with at least three years experience of organising NSS activities including orientation, Seminars etc. will be given preference.

3. Lecturers: (Two in Zoology, one each in Botany, Economics, Journalism & Jaina Studies).

(Rs. 700-40-1100-50-1600).

Qualifications

(a) A Doctor's degree or research work of an equally high standard in the relevant subject, and

(b) Consistently good academic record with 1st or high second class (B in the seven point scale) Master's degree in a relevant subject or an equivalent degree of a foreign University.

(c) Qualifications prescribed in (b) above are relaxable in case the research work of a candidate as evident either from his thesis or from his published work is of a very high standard. If a candidate possessing a Doctor's degree of equivalent research work is not available or is not considered suitable, a person possessing a consistently good academic record (weightage being given to M.Phil or equivalent degree or research work of quality) may be appointed provided he has done research work for at least two years or has practical experience in a research Laboratory/organization on the condition that he will have to obtain a Doctor's degree

or give evidence of research work of equivalent high standard within five years of his appointment failing which he will not be able to earn future increments until he fulfils these requirements.

Specialization

Lecturer in Botany

Bryology/ Morphogenesis/ Molecular-genetics.

Lecturer in Zoology.

Genetics / Entomology/ Parasitology/ Molecular or Cell Biology.

Lecturer in Economics

(i) Economic Development and International Trade.

(ii) Indian Economics & Economic Statistics.

Lecturer in Journalism

(i) M.A. (B+) or M.Phil in Punjabi

(ii) Degree or Diploma in Journalism from a recognised institute/university.

(iii) Professional experience in Punjabi Journalism.

Mahavir Chair in Jaina Studies

Doctoral degree or outstanding research publication should be on his

credit in Jainism. Knowledge of Prakrit/Sanskrit is most essential and that of English will be an extra qualification.

4. Research Assistants—Three (One each in Anthropological Linguistics, Punjabi Literary Studies & Prof. Puran Singh Studies

(Rs. 550-20-650-25-750).

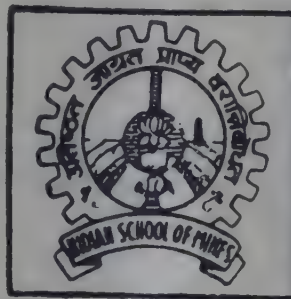
Qualifications

Linguistics: Master's degree in Anthropological. Linguistics with 55% or more marks with specialization in Structural Analysis of Culture.

Punjabi Literary Studies: Master's degree in Punjabi with 55% or more marks, experience of Editing manuscripts or preparation of anthologies/ Literary encyclopaedic entries. Knowledge of Classical Language (Persian/ Sanskrit) desirable.

Prof. Puran Singh Studies: Master's degree in Punjabi with at least 55% marks. Should have publications to his/her credit. Two years experience of editing. Persons with higher qualifications and teaching and/or research experience will be preferred.

(Contd. on next page col. 3)



Indian school of Mines

DHANBAD-826004

No. 615002/79

Dated: 29. 1. 1979

ADMISSION NOTICE 1979

Indian School of Mines, a deemed University, invites applications for its Entrance Examinations for admission to the following groups of programmes:

- I. 5-year (10 Semester) integrated programmes leading to the award of B Tech degrees in Min Engg/Min Machinery/Pet Engg, and M Sc degrees in Appl Geology/Apppl Geophysics. Eighty seats are likely to be offered for this programme, including 40 in Min Engg and 10 each in the other four disciplines.
- II. Direct admission to V Semester of the 5-year (10 Semester) integrated programmes leading to M Sc degrees in Appl Geology and Appl Geophysics in 'make up' vacancies.
- III. 3-year (6 Semester) Condensed degree programme leading to the award of B Tech degrees in Min Engg and Min Machinery.

Entrance Examinations for I and II shall be held on Thursday, the 24th and Friday, the 25th May 1979. The likely centres for the examinations are:

Ahmedabad, Asansol, Bangalore, Bhopal, Bombay, Calcutta, Chandigarh, Cuttack, Delhi, Dhanbad, Digboi, Gauhati, Jamshedpur, Hyderabad, Jaipur, Lucknow, Madras, Muzaffarpur, Nagpur, Patna, Ranchi, Srinagar, Trivandrum and Varanasi.

Examination for III shall be held on Friday, the 18th and Satur-

day, the 19th May 1979. The likely centres are Bangalore, Bombay, Calcutta, Delhi, Dhanbad, Hyderabad and Nagpur.

Eligibility

For group I : Pass in Higher Secondary (Science stream with Mathematics, Physics, Chemistry and English or in the Technical stream) OR Pass in one-year Pre-university (or equivalent) or Indian School Certificate Examination with Mathematics, Physics, Chemistry and English OR Successful completion of 1 year of the plus-2 stage of the 10+2 pattern of education or of the Intermediate or of the 2-year PUC, with Physics, Chemistry, Mathematics and English, provided the applicant has taken a PUBLIC examination either at the Matriculation level or later.

Those who have been selected through the Entrance Examination and have, in addition, passed the plus-two stage of 10+2 pattern of education or the 2-year PUC or Intermediate or equivalent examination can appear for an Advanced Test to be held later, for becoming eligible for admission to III Semester of the 5-year programme.

For Group II : Pass in the B Sc exam with Geology and any two of Physics, Chemistry and Mathematics (for the Appl Geology programme) or with Physics, Mathematics and Geology or Chemistry (for the Appl Geophysics programme). In both cases the candidate should have passed Higher Secondary or equivalent exam with Physics, Chemistry, Mathematics and English.

For Group III : A diploma in Mining (or Mining and Mine Surveying) in case of B Tech (Min Engg) and a diploma in Mech/Elec Engg in case of B Tech (Min Machinery) after having passed the SSLC/Matriculation or Higher Secondary or equivalent examination, with three years industrial experience after obtaining the diploma. Sponsored candidates are preferred.

Age-limit

Maximum age limit 21 years for Group I (except for Pet Engg for which it is 20 years) and 24 years for Group II. These limits are relaxable by three years in case of SC/ST candidates.

General

(i) Those selected in the Entrance Examination for Group II and III (as also for Pet-Engg-I) may be required to appear for a personal interview also.

(ii) 15% of the seats are reserved for Scheduled Caste and 5% for Scheduled Tribe candidates, with certain financial concessions. Arrangement for free Coaching Classes for SC/ST candidates are available — A separate notification would be issued later in this regard.

(iii) For Groups I and II, one seat each in Pet Engg, Appl Geology and Appl Geophysics is reserved for Girl candidates subject to their qualifying in the relevant Entrance Examination. There are certain other reservations also.

LAST DATE FOR ISSUE OF APPLICATION FORMS BY POST: MARCH 10, 1979

LAST DATE FOR RECEIPT OF COMPLETED APPLICATIONS: MARCH 20, 1979

Late receipt of application forms by candidates for any reason whatsoever shall not be considered as a valid reason for late submission of the completed form.

Detailed Memorandum of Information and the Application Form (Form A for Group I, Form B for Group II and Form C for Group III) may be had from the office of the undersigned either in person or by post on remitting a crossed Postal Order for Rs. 5 (Rupees Five) payable to Registrar, at ISM Post Office, Dhanbad.

Candidates should clearly specify the form they require (A, B or C) in their request for application form.

**S P VARMA
REGISTRAR**

(Contd. from previous page)

General

Higher start within the grade admissible depending upon the ability and experience of the candidate. House rent and dearness allowance, Provident Fund and Medical facilities according to the University rules.

Applications, complete in all respect on the prescribed form, accompanied by a crossed postal order worth Rs. 5/- (Rs. 2/- for candidates belonging to Scheduled Castes/Tribes and Backward Classes) drawn in favour of the Registrar, Punjabi University, Patiala, should reach the University by 23.2.79. The forms can be had from the Superintendent (Establishment) by sending a self-addressed envelope of the size of 23 x 10 cms stamped with 25 paise postage.

Persons already in service should apply through proper channel; Govt. servants who are not in a position to submit their applications through proper channel before the due date should submit an advance copy before the due date and regular applications through proper channel by 27.2.79.

REGISTRAR

OSMANIA UNIVERSITY

HYDERABAD-500007 (A.P.)

Advertisement No. 3/1979

Applications, in the prescribed form, together with the registration fee of Rs. 5/-, are invited for the following posts in the University service, under SAP in Geography, so as to reach the undersigned on or before 28.2.1979.

1. Reader in Geography
Rs. 1200-50-1300-60-1900
2. Lecturers in Geography
Rs. 700-40-1100-50-1600

Age

Reader: Not more than (40) years

Lecturers: Not more than (35) years

Note

1. Age limit does not apply to the employees of this University.
2. Relaxation in age to the extent of five years may be granted to candidates belonging to SCs, STs. and B.Cs. respectively in case of Lecturers only.
3. Age relaxation can be considered in deserving cases.

14%, 4% and 25% reservations are made for Scheduled Castes, Scheduled Tribes and Backward Classes respectively in case of Lecturers only.

Application forms can be had from the Director, Department of Publications and University Press, Osmania University, Hyderabad-500007, (A.P.) on payment of Rs. 4.50 in person or by money order or by a postal order UNCROSSED made payable to the Director and by sending a self-addressed envelope (11½ x 26½ cms.) duly stamped for ordinary or registered post.

A latest passport size photograph should be affixed on the application form.

Full particulars can be obtained on requisition from the Director, Osmania University Press, free of cost, by sending a self-addressed stamped envelope.

**B. Ramachandra Reddy
REGISTRAR**

UNIVERSITY OF POONA PUNE-7

Applications are invited for the under-mentioned posts in the various Departments of the University :

1. Professor : (1) Physics (one) (Temporarily). (Sr. 1)
2. Readers : (1) Psychology (One) (Sr. 2) (2) Botany (One) (Sr. 4) (3) Physics (One) (Sr. 3)
3. Lecturers : (1) German (One) (Sr. 5) (2) Politics and Public Administration (Two) (ULP Posts) (Sr. 6) (3) Defence Studies (One) (Sr. 7) (4) Geography (One) (Sr. 8) (5) Geology (One) (Sr. 9) (6) Zoology (Two) (Sr. 10)

General Qualifications

(1) Professor : Must be scholar of eminence, must have to his credit research work of independent merit, must possess fairly long experience of teaching of Post-Graduate classes and guiding advance research in the respective subjects.

(2) Reader : Must possess fairly long experience of teaching of Post-Graduate classes and guiding research in the respective subjects.

(3) Lecturer : Must have a Doctor's Degree or published work of an equally high standard and consistently good academic record with First or High Second Class (B+) Master's Degree in a relevant subject or an equivalent Degree of a foreign University.

Minimum Qualifications

(1 & 2) Professor & Reader : As prescribed by the University for recognition as Post-Graduate Teacher (By Research)

(3) Lecturer : As prescribed by the University for recognition as Post-Graduate Teacher (By Papers)

Scales of Pay

- (1) Professor : Rs. 1500-60-1800-100-2000-125/2-2500.
- (2) Reader : Rs. 1200-50-1300-60-1900
- (3) Lecturer : Rs. 700-40-1100-50-1600

All posts carry usual allowances admissible under University rules in force from time to time.

Age Limit

Candidates applying for the post of Professor should ordinarily be below the age of 50 years, those applying for the post of Readers should ordinarily be below the age of 45 years, and those applying for the posts of Lecturers should ordinarily be below the age of 35 years. However, this age limit may be relaxed in the cases of deserving candidates.

Eight copies of applications together with the eight copies of testimonials, if any, separately for each post, giving particulars in the prescribed form should be sent to the Registrar so as to reach him not later than **Saturday the 10th March, 1979.**

The prescribed set of application forms, together with requisite detailed information, will be supplied to the candidates, on request accompanied by (1) a self addressed envelope (23 x 10 cm) bearing postal stamps worth Re. 1/- for the postage, and (2) A postal order of Rs. TEN drawn in the name of the Registrar, separately, for each post. This amount will also be accepted in cash in the University Office.

The applicants, in their letters, asking for set of applications, must specify

(1) the name, and (2) the serial number of the post, for which they want to apply.

The selected candidates will be on probation for a period of two years and will be required, on confirmation, to contribute to the University Provident Fund and to enter into an agreement of service with the University. They will also have to pass a test in elementary Marathi, at the time of confirmation, if Marathi is not their mother-tongue.

Notes

- (1) Those who are employed must submit their applications through the proper channel.
- (2) Some of the conditions may be relaxed in the case of exceptionally capable candidates.
- (3) Candidates called for interview will have to present themselves for an interview at their own expense.
- (4) Canvassing direct or indirect, will be disqualification.
- (5) In the case of lecturers, other things being equal preference will be given to candidates belonging to Scheduled Castes (including Scheduled Castes converts to Buddhism) and Scheduled Tribes.
6. Higher starting salary may be given to deserving candidates.

G.J. Abhyankar
REGISTRAR

UNIVERSITY OF BOMBAY BOMBAY-400032

Applications are invited in the prescribed form for the post of Professor in the University Department of English in the pay-scale of Rs 1500-60-1800-100-2000-125/2-2500. The post carries the benefits of Dearness Allowance, House Rent Allowance and Compensatory Local Allowance at the rates sanctioned by the Executive Council from time to time. The post also carries the benefits of the University Provident Fund. A higher starting pay may be given to a person possessing high qualifications. The appointment will be on probation for two years; but the probationary period may be waived by the Executive Council in a special case. Other things being equal preference will be given to candidates from backward classes.

The minimum qualifications prescribed for the post are as under:

Essential

- (a) An eminent scholar with published work of high quality actively engaged in research. Ten years' experience of teaching and / or research. Experience of guiding research at doctoral level.

or

An outstanding scholar with established reputation who has made significant contribution to knowledge.

- (b) Specialization in Modern English Literature, i.e. English Literature from 1550 to the present day; research interests and critical contribution preferably in the English Literature of the present century.

Desirable

Familiarity with the works of the masters of American Literature.

Two copies of the application in the

prescribed form, which will be supplied on request by post or can be had from the Registrar's Office (Room No. 121), should be submitted to the Registrar, University of Bombay, Bombay-400032 so as to reach him on or before **28th February, 1979.**

Candidates called for interview will have to present themselves at their own expenses.

Canvassing, direct or indirect, will be a disqualification.

P. S. Sawant
Offg. REGISTRAR

GURU NANAK DEV UNIVERSITY AMRITSAR

Advertisement No. 1/79

Applications are invited for the following posts on prescribed form obtainable (free of cost) from office of the Registrar, Guru Nanak Dev University, Amritsar by making written request accompanied by self addressed stamped envelope of 23 x 10 cm. so as to reach this office by **28-3-1979** alongwith crossed Indian Postal Order(s) for Rs. 7.50 (not refundable) drawn in favour of Registrar, Guru Nanak Dev University, Amritsar.

Persons already in employment must send their applications through their employers.

Grade plus allowances as admissible under University rules.

1. Professor of Physics (Rs. 1500-60-1800-100-2000-125/2-2500)
2. Reader in History Department (Rs. 1200-50-1300-60-1900)
3. Executive Engineer (Civil) (Temporary) (Rs. 800-50-1300/50-1600)

Qualifications : For post at Sr. No. 1 An eminent scholar with published work of high quality actively engaged in research. Ten years' experience of teaching and/or research. Experience of guiding research at doctoral level. **OR** An outstanding scholar with established reputation who has made significant contribution to knowledge.

Specializations : Any modern area of Theoretical and experimental Physics including Mathematical, Elementary Particle, Nuclear, Solid State, Laser, or Plasma Physics, Spectroscopy, Chemical Physics.

For post at Sr. No. 2 : Ph. D. Degree in History or equivalent published work, and good academic record with 1st or 2nd Class Master's Degree in History/Philosophy. Evidence of being actively engaged in research.

About five years' experience of teaching and/or research, preferably in the field of specialization, provided that at least three of these years were as Lecturer or in an equivalent position. This condition may be relaxed in the case of candidates with outstanding research work.

Specialization : Historical Thought and Historiography.

For post at Sr. No. 3 : (i) Degree in Civil Engineering from a recognised Indian University or equivalent; (ii) At least eight years experience as Sub Divisional Engineer in a Govt. Department or in a similar position in a private undertaking; (iii) Age below 35 years.

Mohinder Singh Randhawa
REGISTRAR

KUMAUN UNIVERSITY NAINITAL

Advertisement No. 5124 Dated 23-1-1979

Applications are invited for the following temporary posts likely to become permanent in due course, except where indicated otherwise :

1. Professors (Rs. 1500-60-1800-100-2000-125/2-2500); one each in Economics, Hindi, Political Science, Sociology, Zoology, Chemistry Commerce and Law.
2. Readers (Rs. 1200-50-1300-60-1900); one each in English, History Sanskrit, Chemistry, Geology.
Fields of Specialisation : Chemistry : Inorganic/Organic/Physical with the proviso that the Reader will belong to a branch different from that of the person appointed as Professor.
Geology : Structural Geology. (The post of Reader in Geology is a leave vacancy likely to last upto 7-11-1980.
3. Lecturers (Rs. 700-40-1100-50-1600. The number of posts is indicated in brackets :
Political Science (1), Music (Vocal) (1), Geography (1), Hindi (1), History (1), Sociology (2), Botany (2), Geology (2), Zoology (2), Law (2), Education (3), Chemistry (3), Commerce (5), Physics (7) and English (8).
Fields of Specialisation—Hindi—Bhasavigyan/Ritikalin Sahitya/Lok Sahitya/Madhyakalin Sahitya/Sanskrit/Prachin Sahitya.
History—Ancient Indian History.
Botany—Cyto-genetics / Biochemistry/Plant Physiology/Microbiology/Plant Pathology.
Chemistry—Organic and Inorganic.
Geology—Environmental Geology-Applied Geology/Crystallography-Minerology.
Zoology—Entomology.
Commerce—Management / Accountancy/Taxation/Company Law.

Qualifications

Lecturers (Except Law)—Essential :

1. (a) A doctorate in the subject of study concerned or published work of a high standard in that subject; and
- (b) Consistently good academic record (that is to say, the candidate must have obtained atleast 50% marks in any two of the three examinations below the post-graduate examination or 'B' grade in case of examinations conducted under 7-points scale formula with First or High Second class (that is to say, with an aggregate of more than 54% marks) in Master's degree in the subject concerned, or equivalent degree of a foreign university in such subject.

Note

1. Where the Selection Committee is of opinion that the research work of a candidate, as evidenced either by his thesis or by his published work, is of a high standard, it may relax any of the requirements spe-

- cified in sub-clause (b) of clause (1).
2. If a candidate possessing qualification prescribed in sub-clause (a) of clause (1) is not available, or is not considered suitable, a person possessing a consistently good academic record (due weightage being given to M. Phil or equivalent degree or research work of quality) may be appointed on the condition that he will attain the prescribed qualification (namely doctorate or published work as aforesaid) within five years from the date of his appointment.

Provided that where the teacher so appointed fails to attain the prescribed qualification within the said period of five years, he shall not be entitled to yearly increments after such period, until he attains such qualifications.

Lecturer in Law—Essential : Master of Laws.

Readers & Professors (Except Law)

Essential

1. Qualifications as prescribed in sub-clauses (a) and (b) of clause (1) above for the posts of Lecturers, read with note 1 thereunder.
2. Atleast 10 years experience of teaching post-graduate classes for Professors and 5 years for Readers.

Preferential

1. High academic distinctions.
2. Experience of guiding research work.

Professor in Law

Essential

1. LL.M. with doctoral degree in Law.
2. Atleast 10 years experience of teaching post-graduate classes in Law.

Preferential

1. High academic distinctions.
2. Considerable experience of guiding research.

General

1. For the posts of Lecturers, other things being equal, preference will be given to otherwise qualified Scheduled Caste/Scheduled Tribe candidates within the quota of 18% and 2% respectively. Such candidates should indicate in their applications that they belong to Scheduled Caste/Scheduled Tribe and attach certificate to this effect from District Magistrate of the District to which they belong. No other certificate for this purpose will be entertained.
2. Knowledge of Hindi is essential. Preference will be given to those candidates who have adequate knowledge of teaching classes through Hindi medium.
3. All the above posts carry Dearness Allowance as admissible under the rules of University and a Hill Development Allowance of Rs. 100/- p.m. Benefit of Contributory Provident Fund will be admissible from the date of substantive appointment.
4. Candidates already in employment must apply through proper channel. No T.A./D.A. will be paid to candidates called for interview. Right

to call a candidate for interview rests with the University.

5. The University reserves the right to vary the number of vacancies under the any category.
6. The selected candidates can be posted at any of the constituent colleges of the University at Almora, Nainital, or elsewhere.
7. Application for each post/should be sent separately alongwith attested copies of marksheets and certificates in support of the qualifications and experience mentioned in the application form.

Prescribed Application Forms are available from the Registrar, Kumaun University, Nainital—263001 on payment of postal charges etc. Rs. 4/- by crossed Indian Postal Order/Bank Draft (but not Money Order) payable to Finance Officer, Kumaun University, alongwith self-addressed envelope (size 23 cm x 10 cm.)

Applications incomplete in any respect (i.e. without marksheet, certificates etc.) or those received after last date for submission will not be entertained for consideration. Delays in postal delivery will not be taken into account.

Last date for Receipt of Applications is Saturday, March 17, 1979

Note : Candidates who have already applied for the posts of Lecturers in (1) Physics, Botany & Education in response to Advertisement No. 2433, dated 29-9-1977 (2) Sociology & Law in response to Advt. No. 485 dated 28-4-1978, (3) Geology in response to Advt. No. 2446, dated 24-8-1978 need not apply again. In case they have added to their qualifications since their previous applications, they may intimate this University accordingly.

REGISTRAR

INDIRA KALA SANGIT VISHWAVIDYALAYA KHAIRAGARH (MP)

Applications are invited on the prescribed form for the post of one Physicist in the Scale of Pay of Rs. 400-30-640-EB-40-800 which is likely to be revised. Candidates must have passed Master's Degree in Physics from a Statutory University in First or Second Division. Experience of teaching for at least 2 years will be necessary in the case of Second Divisioners. Preference will be given to those with specialization in Sound or for work done on Sound. In exceptional circumstances, any of the prescribed qualifications may be relaxed at the discretion of the University. Details and prescribed Form may be obtained from the Registrar by sending Postal Order of Rs. 5/- with self-addressed Re. 1/- stamped envelope of 23x10 cm. Last date for receipt of application is 16th March, 1979.

D. K. Ghosh
REGISTRAR

University News

A FORTNIGHTLY CHRONICLE OF HIGHER EDUCATION & RESEARCH MARCH 1, 1979



Shri Tarlok Singh, Shri Justice M. R. A. Ansari, Dr. Amrik Singh, and Dr. Mulk Raj Anand at the Punjabi University convocation held recently in Patiala.

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Hony. Editor : ANJNI KUMAR

Internal Management of Universities

T. B. Mukherjee*

There were a few Education Commissions and Reforms Committees regarding University administration. But as yet the management of the universities has not been put on a sound scientific basis. The condition differs from State to State.

I have experience of working as a Vice-Chancellor of three Universities—namely, Bihar University, Muzaffarpur (Bihar), Kalyani University, Kalyani (West Bengal) and at present Patna University, Patna (Bihar). In Bihar the University Reforms Committee was set up by the Bihar Government which submitted its report in 1973. Earlier they had appointed another Committee under the Presidentship of Shri K.S.V. Raman and I was Member-Secretary. The major problems for administration in Universities is the relation between the State Government and the Universities. Both in West Bengal and in Bihar, the Vice-Chancellor is selected primarily by the Chancellor, but in fact the selection is made by the Education Minister and the Chief Minister. The Vice-Chancellor is to act in accordance with wishes of the Syndicate which is known as Executive Council in other Universities. The composition of this body varies from place to place. In Bihar the Vice-Chancellor has no hand in the composition of this body. Some are ex-officio members being government representatives; and some are elected by the Senate; others come by rotation from among the Heads of University Departments and Principals of Constituent Colleges and two persons are nominated by the Chancellor. But here also the view of the Vice-Chancellor is not taken. There has been a recent change in Bihar and the person appointed the Dean, Students' Welfare has been made ex-officio member of the Syndicate. The selection of only this person is done by the Vice-Chancellor. In Kalyani University the Deans of faculties were appointed by the Chancellor on the recommendation of the Vice-Chancellor and invariably his suggestions were accepted and Deans were ex-officio members of the Executive Committee. The Deans and the Government officials were of great help to the Vice-Chancellor to carrying on the work in the Executive Committee. The experience in Bihar is that the government officers who are ex-officio members do not attend the Syndicate meetings; may be they are busy otherwise. It is necessary that their attendance is more regular. The Deans of the faculties who are responsible for maintenance of academic standards in their respective faculties ought to be members of the Executive Committee/Syndicate. The office of the Dean is quite different in our country than in the U.S.A. Much of the day to day work of the Vice-Chancellor can be done by the respective Deans. In some of the universities in U.S.A., the moment a person is appointed Dean he becomes a whole time officer of the University and his work is development of the respective faculties and to help the Vice-Chancellor in administrative matters. There is a strong case for devolution of authorities in the Indian universities. It is essential that the composition of the Executive Committee or the Syndicate should be changed so that persons who are carrying on administrative work of the university can lay down certain policies and can be in a position to effectively give effect to such decisions. The present position is that the Vice-Chancellor has no hand in the selection of the Syndicate, but has to carry on the wishes of that body and thus he fails to formulate his own policy or to give effect to such policies. It is unlike the cabinet where the Prime Minister and the Council of Ministers carry on the functions. It is also unlike the Presidential form because the Vice-Chancellor does not select his team. The result is that the Vice-Chancellor has to carry on the wishes of the dominant group in the Syndicate even if he does not like the policy personally. This is against any principle of public administration. The chief executive, as the General Manager, fails in his function in effective administration. It would rather be more democratic if the Vice-Chancellor is elected by

*Vice-Chancellor, Patna University.

the Senate, that is the same body which elects members of the Syndicate. In that case he will have his own following in the Syndicate and find the work easier and can deliver goods. The other way will be to empower the Vice-Chancellor to appoint Deans and the Deans to be ex-officio members of the Syndicate. The term of the Deans should be co-terminus with that of the Vice-Chancellor and the Deans should be whole time officers of the University.

It is also necessary to have decentralisation of administration and it may broadly be divided into—(a) academic, (b) administration and (c) finance; and there ought to be one Pro-Vice-Chancellor to look after the academic work, another Pro-Vice-Chancellor for development and there should be a Financial Adviser for the financial side. The main functions of the Pro-Vice-Chancellor will be to carry on the routine work and the day to day functions of the Vice-Chancellor. In American Universities there are a number of Vice-Presidents to look after such functions. The role of the Vice-Chancellor should be to maintain proper liaison with the State Government, the public and to have co-ordination of the work of the various sections and departments of the university. His role should be that of direction, co-ordination and control. There should be a Pro-Vice-Chancellor who should be responsible for development. I am suggesting it because so far as my experience goes that in most of the universities in northern part of India, the major share of the U.G.C grants for development is not spent.

Regarding conduct of examinations, I would suggest decentralisation. Respective Heads of Post-graduate departments should be responsible for the conduct of the examinations. This method is normally in vogue in the American Universities. The Head of a department and the teachers who teach the subject are the best persons for conducting the examinations, because of the fact they have to test their students as to how much they have assimilated the subjects they have been taught. In some of the universities in Bihar, the system of internal moderation has been abolished and the teachers who teach the subject have nothing to do in either paper-setting or evaluating the papers. I feel it is academically unsound. The persons who teach at the postgraduate level are the best persons to judge the students as to their achievements. The university cannot function with the lack of trust in its teachers.

The Controller of Examinations should have the same status as that of the Registrar of the university and should be in independent charge and he should be directly responsible to the Vice-Chancellor.

The colleges in a university vary from their number of students, teachers and also reputation. With regard to good colleges I would suggest that they should be given autonomous status and the Principal of that college should be the final authority regarding the discipline in the campus.

It has been felt that the policy of the government that the police will not enter the campus except at the request of the head of the institution has not cut much ice. By this the police patrolling in the campus for preventive measures is not to be done unless specifically requested. In the absence of a disciplined force for crowd control, these crowds though peaceful

initially damage properties. It has also been seen that the libraries and laboratories of the universities have been damaged by the mischievous elements of the society or by those who want to disrupt and destroy the existing order.

To eradicate hooliganism and also to check infiltration of ruffians and anti-social elements in the garb of students from the campus, it seems desirable to establish a University Volunteer Force in the universities. Much has been thought about establishing the Campus Police at many places, but as the term "Police" might create some confusion and irritation in the mind of students and the teachers alike, the term "University Volunteer Force" might be more suitable. As such, it is earnestly felt that at least one university and each state may provide a laboratory for such an experiment.

The idea is to man the University Volunteer Force by able bodied students and the personnel of Home Guards/regular Police should also be got associated with it. Principals of colleges and Heads of university departments in all the faculties should be made co-ordinators of such a Force. The services of N.C.C. cadets and officers and N.S.S. volunteers may also be properly utilised for this purpose.

The University Volunteer Force should be headed by a retired high ranking Police/Army officer who will manage and chalk out the functions of this Force for proper maintenance of law and order in the campus. The main function of the Force will be to keep vigilance in the campus and report day to day law and order situation and also suggest ways and means to minimise them.

The colleges and the university should recruit able bodied students who are dedicated and committed ones for proper maintenance of law and order and also be able to locate ruffians and anti-social elements who are actually not associated in any way with the university. The students thus recruited may be paid some lump sum honorarium in the shape of scholarship or in the shape of learner-earner aid for the services so rendered in this regard. The Force may work in active collaboration with the constabulary of the government and if necessary may seek assistance of magistracy through the agency.

The Dean, Students Welfare will be the Chief Co-ordinator at the university level, who will keep the Vice-Chancellor well informed as to what is happening in the campus.

The number of the Force may be fixed according to the number of students in each college individually.

The Principals of colleges, the Registrar of the university and the Dean, Students' Welfare may be vested with the Magisterial powers. Should there be any case of cognizable offence, the law of the land will take its own course.

The campus should be guarded by this Force too. This Force will be a sort of Security Force of the Public Sector, entrusted with the duties to protect properties of the university and lives of students, teachers and others in the campus. This will be utilised for maintenance of proper law and order, protection of the properties of the university and also for averting any ugly situation in the campus.

Recruitment of students/employees for intelligence purposes may also be thought of. □

Universities and National Development

R. C. Paul*

National development in the context of developing countries may be considered as a process of societal transformation ensuring high standards of people, high degree of industrialization, greater emphasis on technical and technological advancements, high efficiency, greater involvement of people in taking decisions, and integration and promotion of the forces forging national unity regardless of the differentials of caste, colour, creed, sex, language, regional or other social and economic stratifications. This process of societal transformation will also include within its periphery the change-over of traditional society into the modern society characterised by modernization and the forward-looking (futuristic) feature on the part of the people blended with undogmatic, enterprising and scientific outlook.

Prior to formulation of strategies for national development including educational planning, the constraints of existing infrastructure and historical perspective will have to be recognised. Identification and recognition of these constraints would enable the people to launch upon a realistic programme of national development rooted in the culture of a country and directed by the availability of resources.

Inheritance of Free India

India, at the time of independence about 31 years ago, inherited a vast multitude of problems arising out of demographic, economic, social, political and educational considerations. Demographically, the country had vast population and a very severe problem of rehabilitating lakhs of people as a consequence of partition. Economically, poverty was looming large on people, the resources were not tapped to the extent of ensuring employment to those who could be employed, and self-reliance in food was a far cry. Socially, the country was an example of social inequalities shrouded in the mist of ignorance, superstitions and prejudices. Differences in language, religion, culture and life-styles of people were some of the dominant factors disrupting social cohesion. Politically, the awareness of functioning of democratic form of government was greatly handicapped for reasons of non-enlightenment on the part of the people. Educationally, a major chunk of the Indian population was enjoying the deep slumber of illiteracy.

Necessitated by the need of the hour, therefore, the preamble of the Constitution of Free India enshrined the ideals of justice, liberty, equality and fraternity.

Educational Scene

For the first time in the history of human civilization the development of education on a world-wide

scale was understood as tending to precede economic development. This trend was set initially by the developed countries like U.S.A., U.S.S.R. and Japan. Many developing countries, for example, India, Cuba and the Peoples' Republic of Congo which have a low national per capita income also decided to follow the same path by spending a lot on the universalization of primary education and the expansion of secondary education despite numerous difficulties involved.

Working on 'education as investment' several research workers (Schultz, Denison, Beckes) came out with the conclusion that expenditure on education is an investment. This fact was recognised by India as well. Consequently after attaining political freedom, our country launched upon a very ambitious programme of bringing education within the reach of all people. Attempts at universalization of primary education, diversification of secondary education, increasing facilities for higher education, and opening the centres of social education are some of the many steps taken in this direction. The model for education system in India, however, could not transcend the barriers set by the legacy of the British imperialism. Whether such a system of education would take into its ambit the aspirations of the Indian masses and whether it would provide an answer to the problems of social and economic disparities remained doubtful. Efforts were, therefore, made to evolve a system of education reflecting the needs and aspirations of Indian people. The University Education Commission Report (1949) and the Secondary Education Commission Report (1953) were an outcome of such an effort, though fragmentary in nature. The Education Commission Report (1966), for the first time, viewed education in its totality encompassing all the sectors of education comprehensively.

The problems of national development, such as, self-sufficiency in food, economic growth and full employment, social and national integration, and political development in a democratic framework were thoroughly discussed and the role of education in the development and utilization of physical and human resources was spelt out by relating education to the life, needs and aspirations of the people on the one hand and ensuring quantitative expansion and qualitative improvement on the other. Attempts were also made to link up education with the national objectives, such as productivity, social and national integration, modernization, and inculcation of social, moral and spiritual values. Realizing fully well the scientific and technological requirements of the future society of India, as of the whole world, science education and search for talent in that direction were emphasised. Vocationalization at the secondary stage and work-experience at the school stage were stressed to relate education to employment. Higher education system was sought to be designed to meet the challenges of specialized manpower required for national development.

Pressures and Challenges

Any educational system is subject to internal and external pressures - internal, because of diverse forces, contradictions and malfunctioning within the system; and external, because of the continuous organization

* Vice-Chancellor, Panjab University,

and reorganization of the system view of political, social and economic forces in an effort to bring the society close to the advanced nations of the world. The present crisis in education in our country is particularly due to external pressure of competing with developed countries. The main challenge is that of technological revolution essentially useful for modernization and industrialization, but equally dangerous because of its pollution effects. In a bid to compete with developed countries in respect of technetronic advancements, at moments, the developing countries tend to ignore their priorities which upsets the economy of the country as also at the same time fails to meet the immediate requirements for national development.

Another challenge before the developing countries is the disparity between the economic growth rate and the population growth rate, the consequential impact of which hits the employment market adversely. Besides, disparities between the rural and urban areas, between the landlord and landless workers are causing economic disequilibrium which cannot be understood on the basis of statistics of GNP, as it does not indicate the equatability of control and distribution of wealth.

The explosion of knowledge in all fields of human endeavour, for instance, the contributions of psychology in the field of behaviourism, genetic epistemology, cognitive processes, algorithms, the researches in the field of general and applied linguistics covering the areas of psychoanalysis, anthropology and sociology; semiology and cybernetics; science and technology etc., provides a new dimension to the educational efforts.

The societal needs, such as provision of lifelong education to the people in different walks of life, ensuring vertical mobility for workers in different fields; the idea of associating industries, business houses, health services and several other such institutions with educational institutions; the need-differentia of students; the innovative methods of teaching and many considerations of changes in the political, cultural and social milieu, are some of the impelling considerations for the adding new dimensions to universities education with a view to ensuring national development.

New Dimensions of University Education for National Development

To meet the challenges as summarily given above, the new educational policies and programmes will have to be formulated keeping in view the direction and targets of national development and the constraints. The role of the universities in this crucial task has to extend beyond the confines of the twin functions of teaching and advancement of knowledge. Consequently, new dimensions need to be added and the older ones require extension in range, depth and complexity.

The functions of universities in India have been specifically spelt out in the Education Commission Report (1966) in terms of the cultivation of new knowledge; interpretation of old knowledge in the light of new needs and discoveries; vigorous engagement in the pursuit of truth; identification and

development of the gifted to exploit their potential to the fullest; provision of competent manpower to the society in the areas of agriculture, arts, medicine, science and technology; promotion of equality and social justice and reducing the social and cultural differences; and development of attitudes and values needed for developing good life in individuals and society.

Efforts to achieve these objectives call for radical qualitative and quantitative changes in the existing system. Quantitative expansion of higher education should lead to broad development of many institutions capable of meeting more and more individual needs. Diversification of structures, curricula and student categories would be a step in the right direction. Diversification of structures should lead to multiplying the programmes of higher education. In addition to the prevailing closed and competitive system of higher education, the facilities for evening classes and part-time classes should be extended to more students. The open system of higher education should also be given a trial. Such a system is non-selective, non-competitive and non-prescriptive in nature. These non-formal channels would have different requirements for admission, teaching and examinations. A number of short study cycles running parallel to the longer ones may be tried. Setting up of technical and other institutes to meet specific local needs may be encouraged. Experiment of the 'open universities' being practised in U.K. and that of the 'University without Walls' being carried out in the U.S.A. may be tried in the field of higher education here. The admission criteria for the above institutes should be liberal, non-formal and based on candidates' motives and their professional future rather than on school credits and diplomas.

Universities are the places where competence may be enhanced by introducing innovative practices like specialization in various academic and professional courses. Various models of self-education, such as the programmed or computer-assisted instruction, television courses, language laboratories etc. also call for different evaluative procedures for comparing skills acquired under varying conditions by different individuals.

Quantitative expansion of facilities for higher education as explained above will broadly increase the man-power to meet the needs of the country. 'Excellence' will not necessarily be the idea behind these innovative practices.

Qualitatively, however, a relatively smaller number of 'centres of advanced studies' or 'centres of excellence' which are comparable with the highest international standards should be set up in the developing countries. In India, such centres were started in 1963 by the U.G.C. in consultation with the universities. These centres would go a long way to serve as breeders of excellence. Besides these centres, the IITs' and the Agricultural Universities, if made functional to the requirements of rural economy, would immensely contribute to national development. What is needed is to strengthen these basis of academic excellence and increase their number gradually.

(Continued on page 123)

Universities and National Development — Linkage with Environment

P. J. Madan*

National development is a goal towards the fulfilment of which the activities of the community as well as the individuals should be geared to. For specifying various aspects of this all-embracing goal, different areas of development may be thought of, viz., cultural, economic, social, educational, industrial, agricultural, etc. These dimensions of the national development, though call for very specific tasks to be accomplished, are inherently interlinked and interdependent. Planning and execution of the tasks in an area, therefore, have to be thought of in close coordination with other areas of development. In each area, there are agencies which, influence not only the developmental programmes in that particular area, but, also by their very nature, have to be linked with the programmes of other areas for effectively responding to the task of national development. A university is such an agency for educational development. In terms of concrete functions, a university traditionally has kept in view three major objectives, viz., teaching, research and extension work in the field of education. These academic objectives of a university have to be seen in a changed context of national development. The change in the context has been brought about through the initiation of developmental programmes in all walks of life.

Implementation of these developmental programmes demands suitably trained personnel who can be engaged on the jobs of critical needs in these areas. Obviously, these programmes would be carried out in the closer context of the community life. And, therefore, the trained personnel who would take the leadership role in these programmes would have to have the adequate know-how of creating congenial processes to realise the objectives of these programmes. This would, of necessity, mean that those in the universities, who would prepare these personnel would be having sufficient awareness of these processes, and the necessary conditions to be created for making this preparation more effective. Moreover, the very process of implementation of certain programmes would, in due course of time, throw up new problems which would affect the task of development. The problems would have to be tackled continuously to work out more effective solutions to these for implementation at a later stage. This would further mean that those who would create new knowledge and new ways of dealing with things, that is, the creative individuals and the innovative processes would have to be operative through a very live and sensitive contact with the actual process of implementation. In other words, the objective of a university for creating new knowledge would be attempted

to be achieved in the context of the actual process of development to which the university has initially responded by way of developing knowledge or skills and later on drawing upon the process to receive proper feedback for its further work to find more effective ways thereby accelerating the process of development in a more positive way.

From the line of argument elaborated above, it seems that the context of national development has made a significant impact on the functions of a university. The functions of the university now, in addition to being sufficiently relevant to the objectives of teaching and research, must place greater emphasis on its extension programmes through which it may make an adequate response to the programmes of national development. And, when this view of the functions of the university is taken, it will mean that the university shall have to come out of the traditional fold of its activities and stretch itself out in closer linkage with the environment in which it exists. By environment here is meant the society at large with all its process where the knowledge created by the university finds applications, and has to be fitted into social and economic contexts. Thus, in order to live upto the expectations of the society, and to effectively respond to the cause of national development, it is essential that the university should exist in constant and meaningful interaction with the environment. Various aspects of this linkage with the environment are the issues that have been discussed in what follows.

Various aspects of the 'linkage' and its establishment

When one examines the scope of linking the university with environment a pertinent question would arise as to whether such a linkage was not there in the past. The clearcut answer to this question is that the linkage has been there, but not of the type and in a measure that would meet adequately the needs of the present-day society. The university as an agency catering to higher education could not have existed without meeting the demands of the society at least in some measure. The knowledge created in universities has always been getting diffused into many practical fields like industry, commerce, agriculture, etc. And, through this process of diffusion, the university influenced the life of the society, and in turn got itself influenced. This is how the university has so long been maintaining its linkage with environment in a rather limited way mainly through the channel of knowledge diffusion.

However, at the present stage of development of the nation in different sectors, a time has come when the functions of the university have to be broad and manifold enough to adequately respond to the deve-

*Vice-Chancellor, M. S. University of Baroda.

developmental needs of the society, and in the process, it would create further linkages with the environment and/or renew and strengthen the ones that existed. The prospective of national development will constantly give rise to situations where university will find scope to establish its linkage with environment as clarified earlier. How this can actually be done by utilising such situations has been considered in the following.

I. The involvement of the university in the process of shaping the man-power needed for accomplishing different development programmes is an urgent function of the university now-a-days. In order to do this task effectively, the university has to continuously identify the areas of critical needs for various developmental programmes; enlist abilities and potential needed in those who would be prepared for these areas and finally organise effectively the suitable courses for the purpose. Taking this view of the courses of studies would call for not only laboratory, library or classroom instructional experiences but also the orientation to the young men and women as to how they can function effectively in varying conditions in the society where developmental programmes will be operating. This would obviously call for a greater emphasis on practical experiences which have to be provided by extending instructional process into the real conditions of the environment.

In order to develop such linkage with environment an arrangement of the following type may have to be evolved. The university may select an area in the community where certain development programmes may be going on. The instructional work in the university may be organised in such a way that the students and the Faculty members will for some period go there and participate in these developmental programmes. Obviously, certain aspects of these programmes will come for deeper and closer examination and study by those students who have been studying these aspects through their courses. Other aspects which do not come for intensive observation and study would provide the overall set in which the programme is being launched. In such a dynamic programme, of course, there would be a need for continuously surveying the environment and selecting the areas and adopting them for this instructional work. In addition to these, there would be a need to identifying in these programmes as to what is of instructional value and what are the aspects wherein the students and the faculty can participate. Certain existing programmes of the university like the NSS can be reorganised more meaningfully if the participation of the students and staff members of different faculties is channelised in the way indicated above.

II. In a developing country, the development programmes will, in an increasing manner, be implemented in those areas which have been rather neglected so far. In more concrete terms, this would mean training people in a way that they can fit into these developmental tasks; how university trains people in this respect has been discussed under I. In addition to this, there would be another aspect of this development. There may not be enough opportunities through existing developmental programmes to engage

all the people. There may thus be the need to offer courses to people to enable them to seek self-employment, or reorient themselves to fit into the existing developmental programmes. In any case, to ensure the development of society which would be the goal of education, the university shall have to devise ways and means to get more people into its fold from larger sections of the community and provide to them educational opportunity to make them self-reliant and suitable members of the community. This would be one way through which the university will seek closer linkage with the environment. Such a linkage will mean instituting various courses in a non-formal system of education with lesser rigidities of instructional schedule and certification procedures. These, of course, should be based on environmental needs and would be organised to accelerate the developmental process.

III. It has been already indicated that in the perspective of national development, the university has to make teaching learning broad-based. This may be done by opening different supportive courses that would sustain and strengthen the implementation of various programmes of national development. The existing courses of studies will have to be reorganised to satisfy this requirement. From the point of view of the functions of the university, the implication is that the university teaching has to be reorganised; it has to be made responsive to the environmental needs so that the knowledge transmitted may be received in closer context of the situations where it finds applications. This process of organising courses and carrying out other instructional programmes at the university, visualises a teaching community which will comprise regular teaching staff as well as other experts from the different fields of the community. It can be easily seen that when many new courses have to be instituted and many of the existing ones have to be reorganised to suit the developmental needs of the society, the knowledgeable people engaged on the actual jobs in different fields may render essential assistance in the process. In order to mobilise this assistance the university has to identify these people and involve them suitably in the task indicated. Regular and systematic interaction of these people with the faculty staff would be necessary to clarify the roles expected of them in these situations. Through this type of linkage with environment in the community, regular teaching of the university will get toned up and would be made more prone to respond more positively and effectively to the process of the national development.

IV. Level of education of a people is an indication of the potential for development. In this country where nearly two-thirds of the population are illiterate, providing essential education to the teeming millions in a challenging task of national development. All will agree that illiterate adults, who are engaged in different fields of work, and even those who have the potential of being engaged in such tasks would be able to do their part in the process of national development a little better, if they are given education essential for their life and work. It is in this context that the National Adult Education Pro-

gramme (NAEP) should be seen. Universities can play a significant role in the successful implementation of this programme. But the actual role to be played by the universities in this task is to be identified and suitably developed through concrete experiences. One possible way to do it could be as follows: each university or institute of higher learning could take up a few villages or selected urban areas for the intensive work in these, related to NAEP. Through proper organizational efforts the students and teachers could be involved in groups in the implementation of the NAEP at least for a few weeks. Through such participation, not only could the programme already visualised be implemented effectively but efforts could also be devoted to work out what exactly each discipline could offer to the successful implementation of this programme and also, how it could actually be done in terms of providing more concrete ways, viz., developing suitable instructional material and other modes of communication. Initially starting with select villages or areas is to be continued for further refinement of the programme and effective implementation; universities would be contributing to the success of such programme by helping in evolving more effective ways that could be implemented more vigorously by developing suitable agencies or machinery for the purpose. It may be mentioned here that such linkages of universities with environment in the community will concomitantly bring about attitudinal change in the professional outlook of the university teachers, and more significantly of the students, regarding the role of higher education vis-a-vis national development which will pay rich dividends in the long run, even if initial efforts do not appear to be very productive.

Conclusion

Linking university education with the task of national development calls for changes in the functions of a university. These changes are necessitated primarily because certain innovative practices in respect of teaching, research and extension work have to be evolved to connect university with the environment in which it exists. A few concrete ways have been indicated in this paper, in which these functions would be oriented to generate new processes in the university to respond to the needs of national development. When the functions of the university are to be carried out in these ways, there would be certain implications for the overall governance and management of the university. It would, therefore, be necessary that certain other changes in the functioning of the university will have to be made. For instance, in order to relate the work of teaching to the developmental work in the environment, it has been suggested in this paper that knowledgeable people from other areas of work in the community could be involved in instructional programmes. This has been done mainly to render to the courses of studies an element of greater relevance and to increase the scope of exploring the possibilities for devising new courses of study that may cater to certain educational needs which may have remained unattended hitherto. Obviously, this cannot effectively be done by merely changing the mode of ins-

truction. It should have appropriate process to reflect this thinking in the different governing bodies of the university; Board of studies, Faculties, or Academic Councils. This may lead to having adequate representation on these bodies of those people in the community who would ensure establishment and sustenance of the linkage with environment. Similarly, there would be other concomitant changes to be made with regard to the nature of teachers' work and evolving suitable ways of university's functioning. In the final analysis, this shift in university's role in national development calls for viewing the university and its funding in a systematic way and make changes simultaneously in all aspects of university life. □

Universities and National Development

(Continued from page 120)

To ensure effective national development, the internal management of the universities calls for autonomy and democratic practices which will act further as a percolator for disseminating democratic ideals and values among the students. Arousal of and adherence to democratic ideals and values would prove an asset for national development. As far as possible, academic freedom should be ensured to the teachers in matters pertaining to the methods of teaching, the freedom to express their views, conduct research, publish studies and participate in debates on national and international issues.

The academic and administrative functions of the university may be conducted democratically by involving internal representatives of the university as well as the representatives of the community. It, however, needs caution in the sense that unwarranted invasion by the external forces into the academic and administrative jurisdiction of the university should be guarded against, and if necessary checked.

Autonomy in relation to outside agencies implies interpreting this concept within the larger context of the national interest. It means putting some self-constraints on autonomy and train manpower according to the needs of national development and orient research to the needs of the society.

In administration, decentralization of powers within the democratic frame work should be encouraged. Thus the governance of the universities should be done on the principles of decentralization and autonomy on the one hand, and the principle of social accountability on the other.

The cost on all the developmental programmes in higher education is going to be alarming for a developing country which cannot afford the luxury of experimentation in every field of study. The universities can, however, justify heavy drainage of national resources by giving to the Nation the type of competence it needs through highly trained and specialised manpower in various sectors of national development. □

Role of Universities

Universities are a widely discussed subject. Perhaps, there are no other institutions which provoke assertions and counter-assertions as the universities do. For instance, a view is widely held that the universities exist to serve society, but the counter-assertion follows that they must search for truth independent of any immediate utilitarian end. Similarly, the suggestion that the State has a duty to ensure their proper functioning is immediately countered by the argument that the autonomy of universities must be preserved. It is accepted that more students must have access to higher education, but it is pointed out that universities must not grow too large. Specialisation is

important to them. This image of the university, its cloistered functioning, is now being seriously questioned. Not only have the universities been overtaken by material developments, they are today being asked to reach out to the community around them to grapple with the problems of contemporary life. The time-honoured values and objectives of university education are surely under serious challenge.

In this maze of conflicting ideals, challenges and demands, there does emerge a perspective about ideals of a university and objectives of higher education. A university is not merely an institution which is concerned with the formulation of courses,

like ours, in making efforts to bring about social and economic changes, no university can lose sight of the fact that it has to develop the total personality of the student to make him an enlightened and responsible member of the society and a constructive citizen.

An important function of education is to shape the behaviour and attitudes of students to the society as a whole. Education must, in other words, prepare students to discharge their responsibility towards society. And it is in this preparation that education assumes the role of an instrument of change. Unless the education provided in our institutions develops in the students the necessary social awareness, such education is likely to remain unrelated to life and its environment. Our universities should, therefore, develop in its alumni sensitivity to their surroundings and inculcate among the students and teachers a keen awareness of the conditions that exist in their neighbourhood and the problems that call for solution. Perhaps, it is not widely recognised that the benefits of higher education today reach only about 30% of the upper income brackets. The remaining 70% are outside the scope of higher education. And yet, it is also a fact that in our country today, higher education is the most heavily subsidised sector of education. It is, therefore, obvious that a system which draws for its sustenance heavily on public funds cannot for ever deny access to the majority of our people. This is a reality that we have to recognise and accept. It does not, however, follow that we should multiply our universities and colleges to provide higher education facilities to this majority which is outside the university system today. What is important is that those who have been privileged enough to receive the benefits of university education must ensure that the vast sections of our population are also enabled to share in the fruits of development by raising their standards of living, improving the quality of their life, ensuring education of their children and above all, en-

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looked upon as an evil causing narrowness of mind, but a general humanist education is not all that society needs for advancement in today's world of more and more specialisation. There was a time when it was considered that universities existed primarily for sharpening the intellect and enlarging the mind. Everything else was secondary. Equality of opportunity in the matter of admission, the need to mix classes, religions and nationalities, all these were secondary to the training of the intellect. According to this view, the most precious gift that the universities had to offer was to live and work among books or in laboratories and to enable the young to see those rare scholars who have renounced all material success in order to pursue with single minded devotion the area of knowledge that seemed

prescribing courses of study, revising and updating them and formulating new programmes to meet the emerging needs. These are important functions but a university must, above all, be an institution that stands for humanism, tolerance, reason and the adventure of ideas. Unless a university trains its students, irrespective of their courses of study, to think rationally and fearlessly, to develop sensitivities and to appreciate moral and cultural values, it cannot be claimed that it has given to its students what it ought to. The inculcation of liberal values has a place of pride in all universities. A specialist or a professional, however competent he might be in his discipline, cannot serve the society effectively if he has not acquired the ability to see life clearly, and see it whole. In a developing society

abling them to participate in the development process itself.

In order that the universities can do this, it is necessary that they should make determined efforts to transcend the barriers of their traditional functions. The university should be fully aware of the circumstances in which people around them live so that they do not become alienated from the social realities and their students do not develop attitudes which may hamper in their becoming useful citizens. If a student coming out of the university considers that he has very little in common with the rest of the society, we cannot accept that all is well with his education. It does not mean that students should uncritically accept the given ethos of the society in which they live. What is important, however, is that universities should not appear to develop an 'Ivory Tower' attitude in relation to the rest of the community. They must respond to, and reflect genuinely on, the life of the people living around them. It is only through such a process that universities can provide the intellectual and moral leadership to bring about changes in the society. If the universities are acceptable to the community as institutions which have a direct relationship with the welfare of the society, they would place themselves in a better position to influence the development of the society itself. This is the new role in which universities have to develop their perspectives.

University education is not an end in itself, nor is it the end of the educational process. It is only one stage, perhaps a more important stage, in the total educational effort. Therefore, our endeavour to make education relevant to the needs and aspirations of our people should begin right at the initial stage of education. In other words, no changes in the university system are possible unless we make determined efforts to change the whole educational system right from the primary stage upwards. We have also to remember that education is a preparation for the future, a future which is uncertain and about which we can have only a dim vision. It will be presum-

ptuous to hazard any prediction about the future 30 or 40 years hence. We cannot set out in precise details the world of tomorrow. The persistent, and ever increasing changes in the conditions in which we live make it difficult to anticipate the requirements of the future. In this context, education has to be accepted as an effort to develop the capacity to learn and the motivation to continue such learning. Its purpose should be to develop in man the capacity to comprehend and influence the world in which he lives. If we have to develop this capacity in our future generations, it might be necessary for us to rethink on some of the models that we have been following. It is this rethinking that is reflected in the discussions on the national policy for education that we are considering now. As I said earlier, there can be no policy on education that can reconcile all the conflicting ideals and objectives or sets out in precise details all the requirements of the future. The policy has to be open-ended at several points, but we can anticipate certain general directions in which we have to proceed.

It is not enough to identify elementary education and adult education as areas of high priority. The content of education in both cases is equally important. Imparting literacy and numeracy does not add up to education. The programmes of education for the elementary stage and for the adults have both to be reoriented to make them relevant and useful. In the elementary stages, the curriculum must include, besides general education, a substantial component of socially useful productive work. This is important because it enables the development in the children the capacity to work with their hands. It also highlights the dignity of labour which unfortunately we tend to look down upon. We must reverse this trend. There is no escape from hard work and if the education that we give to our children does not develop in them the capacity to work, we cannot claim to have given them any worthwhile education. Apart from developing this ability, this component

should go a long way in inculcating social awareness in the children, and in appreciating their role as productive members of the society. It is from this awareness that the younger generation will grow into active partners in the process of development with a genuine concern for the Community. Similarly, in programmes of adult education also, we have to emphasise the life and work of specific groups of adults for whom the programmes are intended. These programmes should be related to various aspects of their vocation, the improvement of their functional efficiency and an improvement in their way of life.

A similar reorientation of our secondary education is also necessary. The essential components of the secondary stage curriculum should include general education and socially useful productive work. What is more important, however, is that we should make efforts to provide for large scale vocationalisation of education at the secondary stage so that a large majority of students is equipped with the necessary skills and competences to enable them to become earning members of the family and productive citizens. At the same time, we have also to think about extending the scope of secondary education to a much larger number of students, not necessarily by multiplying the number of schools but essentially through opening up various channels, like non-formal education, correspondence courses, evening classes and so on. But all these must be accepted and considered as an integrated comprehensive secondary system of education in which formal and informal learning, theory and practice, general education and vocational education, are not divided off, one against the other. The whole system must be open in which one can join and continue at will at any stage in his life.

This reorientation must be reflected adequately in the university education system too. It is only then that we can legitimately claim to have broken the 'Ivory Tower' attitude which people attribute to our universities. If education has to become a meaningful

instrument of change, it is necessary in the first place that the system itself should absorb changes. The rigidities of traditions, the inflexibilities of processes, etc., that dominate the governance of most universities in the country have to give way to a more flexible and responsive approach.

We have a great tradition of thought and scholarship in our country. Is it not necessary that we adopt a constructively critical approach to the values and schools of thought that have come down to us from the past? Can we not subject them to critical examination and adaptation? If we subject them to the same methods of questioning and scrutiny as we do in other branches of knowledge, is it not possible that we might develop from them a living intellectual system that is relevant in the contemporary situation? We are a multi-cultural and multi-lingual society. One of the most pressing problems facing our country is the development of a national outlook overriding parochial, religious and linguistic considerations. A national outlook and purpose will have to be cultivated in the younger generations and the universities should play a decisive part in this. They should study these problems and contribute effectively to the evolution of a common outlook and sense of unity in the country. Such new ideas and ideals of service should inspire and inform the work in our universities. (*Excerpts from the convocation address delivered by Dr. P. C. Chunder, Union Education Minister, at Marathwada University, Aurangabad.*)

Techniques of land management

Dr. H.R. Arakeri, Vice-Chancellor of the University of Agricultural Sciences, Bangalore while delivering the convocation address at the Mahatma Phule Krishi Vidyapeeth called upon the farm universities in Maharashtra to develop standard techniques for efficient land and water management. He said the target of agriculture in the State could not be achieved without a breakthrough

in this regard. The challenge before the agricultural universities was not only to develop and recommend appropriate farming and cropping systems but also to assist the developmental agencies in convincing the farmers about the advantages of new patterns of agriculture. Dr. Arakeri said lack of irrigation facilities was not the only reason for sub-average yield

in different parts of the State. The National Commission on Agriculture had said that the mismatch between the rhythm of water requirements and the rhythm of soil water availability was the main reason for lower yield. Dr. Arakeri stressed the need for a careful assessment of the suitability of the present cropping patterns and the scope for changing them.

AIU Annual Session

The 54th annual session of the Association of Indian Universities will be held on March 7, 8 & 9, 1979. After negotiations lasting almost over ten years the Association was recently able to get physical possession of the plot of land allotted to it by the Government of India. In order that all member-Vice-Chancellors could be present on the occasion of laying the foundation stone of the Association's institutional building, the annual session which was scheduled to be held in January 1979 was postponed. Dr. P.C. Chunder, Union Minister for Education & Social Welfare has kindly agreed to lay the foundation stone for the AIU House on March 7, 1979. Immediately following the laying of the foundation stone, for the first time, a Panel Discussion will be organised. That will be on 'Universities and National Development'. The idea of a panel discussion is to give the Vice-Chancellors of universities an opportunity of hearing the views of those outside the university system, like leading educationists, executives of large-scale employing agencies, the University Grants Commission, the UPSC, etc.

After attending the panel discussions, Vice-Chancellors and others participating in the annual session of the AIU would assemble at the Punjabi University, Patiala, which has kindly agreed to host this year's session. Again, as part of the annual session, three Group Discussions will be organised. The themes for the group discussions are: Group A: Linkage With Environment; Group B: Internal Management of Universities; Group C: Cost of Higher Education. All the groups will meet simultaneously and a plenary session is also planned. Several Vice-Chancellors and other academics have already contributed papers for the group discussions.

In addition to the group discussions, the annual session will also consider important issues relating to evaluation methods in universities, finance needed by universities, etc. in its general and domestic sessions.

Something like 70-80 Vice-Chancellors and senior academics are expected to participate in the annual session. The session will be inaugurated by Shri Jaisukhlal Hathi, Chancellor of Punjabi University and Governor of the State of Punjab, on March 8, 1979.

The Indian University Association for Continuing Education will be holding its session at the Punjabi University, Patiala, on March 10, 1979. Several active practitioners in the field of continuing education and adult education programmes, besides Vice-Chancellors, are likely to participate in the session.

Assam farm varsity organises agricultural economics conference

The Assam Agricultural University organised recently the thirty-eighth annual conference of the Indian Society of Agricultural Economics. The conference discussed the following major topics:

1. Farming system in the hill area;
2. Rural Credit : structure and flows; and
3. Project evaluation.

The conference was inaugurated by the Assam Chief Minister, Shri Golap Ch. Borbora. He said that the North Eastern region with her heavy rain, undulating topography, magnificent water system, enormous possibilities and formidable problems offered a challenge to the agricultural economists. He expressed the hope that the deliberations of the conference would throw light on the

to solve its problems of development. The University was making efforts at evolving a suitable technology for a break-through in agriculture, particularly in rice culture in the region.

Prof. V.S. Vyas, Director of the Indian Institute of Management, Ahmedabad and President-elect of the conference maintained that agrarian structure in India had become more equitable in the last two decades. The hegemony of big farmers had been broken and a sizable middle class peasantry had come into existence in all the states. This phenomenon was attributable to three factors namely (i) land ceiling legislation which acted as a deterrent to further expansion of large holdings (ii) inducement to invest on middle size holdings as the new techno-

of the farm economy of the country at large and the North-Eastern region in particular. Shri Bora stressed the urgency of maintaining ecological balance and appealed to the economists to make an in-depth study of the problems of soil erosion in the hills. He appealed to the economists to examine the possibilities of rationalizing the structure of rural credit to ensure easier flow of credit to the weaker sections of the farming community and judicious utilization of credit.

The conference was attended by economists, social scientists, administrators, planners and financial experts of the country.

Poona Varsity plans examination reforms

Dr. Ram Takawale, Vice-Chancellor of the Poona University said recently in Pune that the University was planning to organise the examination work at district level centres. The Vice-Chancellor said that the university had appointed a three-member committee to go into the details of examination reforms including the curricula for semesters, formulation of question bank, internal assessment and its linkage with external assessment and substitution of grades in place of marks system. The recommendations of the committee would be implemented from the next academic session. The university was planning to extend the benefits of its education programmes to the common man through its radio transmitter. Dr. Takawale said that the university had approached the Ministry of Information and Broadcasting to permit the university to make use of its educational transmitter. The other development programmes of the university included a three-pronged approach to students, teachers and the public through a system of university journal, appointment of a Public Relations Officer and establishment of information cell for the needy. An experts committee had been appointed to work out the details. A study team of the National Staff College had been requested to suggest reforms in the administration of the university.

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causes and remedies of the problems of the poverty-stricken region. The Chief Minister expressed gratification at the selection of subjects for discussion, all having relevance to the region and hoped that the conference of agricultural economists and social scientists of the country would critically examine the various aspects of these problems.

Dr. M.N. Bora, Acting Vice-Chancellor of the University in his welcome address highlighted some of the problems and prospects of agricultural development in the state and the region and appealed to the economists to study them in their right perspectives and in greater detail, so as to evolve a rational strategy of development. Dr. Bora said that the North-Eastern India was economically an inter-dependent unit and as such an integrated and coordinated approach was needed

logy enabled higher gains from intensive agriculture and (iii) demographic pressures which resulted in sub-division of large holdings. The net result was that a distinct concentration of middle holdings had emerged. Prof. Vyas prophesied if the same trends continued for another ten years, more than three-fourths of India's cultivated land will be in holdings below 15 acres. The process of proletarianization had been halted. Prof. Vyas said while the hegemony of big land holders could be challenged by a combination of legislative, market induced and extra-constitutional moves, it required a different strategy to enable small farmers to consolidate their gains.

State Agricultural Minister, Shri Soneswor Bora released the souvenir and said that outcome of the deliberations would contribute greatly to the development

Prof. Sadanand Varde, State Education Minister said earlier that the Education Department had concluded the discussions with the State Vice-Chancellors and an announcement granting the status of autonomous colleges to some of the leading institutions will be made soon. He said the autonomous colleges would have to observe the usual rules and regulations regarding service conditions of teaching and other staff.

Anti-apartheid seminar at Bombay

The SNTD Women's University and the University of Bombay jointly organised recently the Anti-Apartheid seminar to observe the UN year of Anti-Apartheid. Shri Asoka Mehta, Chairman of the National Committee on Anti-Apartheid Year said that younger generation should help their African counterpart in their struggle against racial discrimination. He suggested that college students should be emotionally involved and called upon them to take up the struggle against racial discrimination. Shri Mehta said that suppression and other outrages in Africa should inspire youth to take up the struggle for their South African brothers.

Prof. Ram Joshi, Vice-Chancellor of the University of Bombay who chaired the inaugural session said that financial assistance may be provided to the South Africans to substantiate expression of our solidarity with them. He said that discrimination of any kind was a danger to freedom.

Dr. (Smt.) Madhuri R. Shah, Vice-Chancellor of the SNTD Women's University welcomed the guests.

Mrs. Shanti Sadiq Ali, Convener of the National Committee said in her paper on 'Politics of Apartheid' that since the white regime was reluctant to South African resistance, the rebellion might be intensified. Other eminent participants in the seminar included Shri Homi Talyarkhan, Shri Ellis Mrema, Dr. R. R. Ramachandani and Prof. N. R. Deshpande.

Bombay Varsity organises seminar on historiography

Dr. Satish Chandra, Chairman of the University Grants Commission inaugurated recently the seminar on Historiography in India: trends in the study of Indian Society organised by the Department of History of Bombay University. He deprecated the practice of universities devoting their studies to their own region ignoring wider aspect of the country and the society. He emphasised the need for comparative studies for proper understanding of social development. These studies would enrich the understanding of problems of the society. Dr. Satish Chandra said that peculiar features of Indian villages and caste system should be studied as they were part of Indian society. He called upon the universities to make arrangements for maintaining continuous relationship between teaching and research.

In his welcome address Prof. Ram Joshi, Vice-Chancellor of the University said that the seminar would be helpful in finding solutions to the problems of the society.

The seminar sponsored by the University Grants Commission discussed subjects relating to ancient Indian history, main phases of historiography before 1947, contemporary and modern trends of writings on the society of Rajasthan during the Moghul period and use of concepts in the study of social history.

Plea for science museums in rural areas

Inaugurating the All-India Museums Conference held recently in New Delhi, Prof. Satish Chandra, Chairman of the University Grants Commission called for establishment of a large number of science museums in rural areas to propagate the methods for application of science in daily life of villagers. He said that such museum should have the facilities to teach people about the use of science. He felt that enough importance had not been given to museums because of ignorance and suggested that efforts should

be made to integrate museums with education. The University Grants Commission was planning to strengthen the programme of museum education in universities. A common syllabi for training of museum personnel was being worked out by the Commission in consultation with the Union Education Ministry. Prof. Satish Chandra said the Commission had sanctioned funds to thirty-five universities to strengthen facilities in the field of museum education.

Dr. N. R. Banerjee, Director of the National Museum said although four hundred museums had been set up in the country their standard was not up to the mark. He called for collection of tribal art and culture exhibits for their preservation for future generation.

Dr. S. M. Nair, Head of the National Museum of Natural History urged for closer cooperation between universities and museums. He said universities should train more museum personnel to promote the growth of museum education in the country.

Alternate energy for rural development

Inaugurating the seminar on 'Alternative Sources of Energy for Rural Development' held recently at the College of Engineering, Guindy, Prof. P. Sivalingam, Vice-Chancellor of the Perarignar Anna University of Technology said that a centre for energy studies will be set up at the university shortly. The university had already established collaboration with the neighbouring institutes and foreign universities to strengthen the programme of energy studies. Prof. Sivalingam said that eighty-five per cent of the total energy was being used by the thirty per cent population living in the developed countries. He suggested the formation of a world federation to check this imbalance.

Shri M.V.C. Sastri, Chairman of the Energy Taskforce at Indian Institute of Technology, Madras in his keynote address said that lack of proper energy inputs had restricted the activities of village industries. He said non-commercial form of energy like firewood,

dung and crop residues should be used. He attributed the economic prosperity of the urban people to the consumption of ninety-five per cent of available energy. He said that considerable increase in the use of commercial energy was needed in rural sector for irrigation, cultivation of fields as well as for production of fertilizers. It would be economically beneficial to shift the emphasis from non-commercial base to a commercial energy source. This would enable the adoption of better agricultural facilities and increase the food-grain production by three to four times.

UGC Review Committee

The University Grants Commission has set up a Review Committee to assess the impact of the on-going programmes of the Commission on the determination and maintenance of standards of teaching, research and examination in the universities. The committee will assess the progress at the Universities of Delhi, Panjab, Gorakhpur, Calcutta, Gauhati, Ranchi, Jabalpur, Poona, Sardar Patel, Madras, Calicut and Sri Venkateswara. Three colleges in each of the four zones will also be identified by the committee. Reports of the visits to universities and colleges are expected to be finalised by the committee by the end of March, 1979. The committee will make an in-depth study of the programmes of centres of advanced study, departments of special assistance, college science improvement programme and college humanities and social science programmes, research fellowships and financial assistance to teachers for research work. The committee affirmed the utility of visiting committees for assessing the development proposals of the universities.

The fourteen member committee consists of educationists, representatives of the Ministry of Education and the Planning Commission with the chairman of the UGC as the chairman of the Review Committee.

Norwegian Government and Indo-American Fellowships

The Union Education Ministry has invited applications on the

prescribed forms for award of Norwegian Government Fellowships for higher studies and research in the field of professional shipping, international ship inspection, hydropower development, electrical power distribution system, pulp/paper technology and nutrition in fish and fishery products. Candidates with two years consecutive practical/professional or teaching experience in the subject field are eligible for the award.

The Indo-American Fellowships are tenable for research at pre-doctoral level and postgraduate specialisation in the USA in the field of energy research, chemistry (polymer), mathematics (general topology/functional analysis), molecular biology, industrial toxicology and museology or art history. Candidates who are engaged in teaching or research and are enrolled for doctorate of philosophy in the subject field at a university/research institute are eligible to apply.

The applications will be received by the Department of Education of the Ministry in Shastri Bhawan by 12th and 6th March, 1979 respectively.

PAU researches on solar energy

Dr. Amrik Singh Cheema, Vice-Chancellor of Punjab Agricultural University said recently in Ludhiana that it was possible to increase crop yield with the proper utilisation of solar energy. He said experiments conducted by the University Department of Agronomy had shown that the yield of wheat crop could be increased by 14.6 per cent through proper use of solar energy. The increase in yield in other crops varied from nineteen to thirty per cent. The Vice-Chancellor said notwithstanding the availability of abundant solar energy, its penetration in crop rows and interception of solar radiation by crops had the limiting factor. The crop Ecologist of the university had suggested bi-directional sowing which would increase the yield. The agronomists of the university had found that the yield of potato crop could also be increased and its sowing time advanced by use of solar energy.

Re-organisation of Rajasthan Universities

The Rajasthan Government has constituted an eleven-member committee headed by Prof. M.V. Mathur, Director of the National Staff College for Educational Planners and Administrators to consider the reorganisation of three state universities. The committee will also examine the question of taking away degree colleges in Jaipur from the jurisdiction of Rajasthan University and the desirability of their functioning under the control of Directorate of Colleges. The question of restricting the jurisdiction of the state universities to postgraduate education will also be considered by the committee. The recommendations of Justice S.D. Singh, Commission for reorganisation of the Udaipur University will be placed before this committee.

The committee is expected to submit its report by April end.

UGC assistance for language books

The University Grants Commission has offered cent per cent assistance to the universities for the production of books in regional languages. The Commission will constitute a standing committee to monitor the progress in adoption of regional languages as media of instruction at university level. The Commission has accepted the view that instructions at the university level should be through the regional languages. The Commission has advised the universities to expedite the process of transition from English to regional languages at the undergraduate stage.

U.P. provides rural orientation for medical education

The Uttar Pradesh Government has prepared a project to provide rural orientation to undergraduate and postgraduate students of the state medical colleges. The scheme envisages that primary health centres operating in rural areas of the state will now be attached to the seven medical colleges which will function as centres of training for the medical students. A sum of

Rs. 26.25 lakhs has been sanctioned for implementing the programme. The health centres will now have facilities for the storage of drugs, surgical instruments for operation theatre and other physical amenities for the staff and students. The scheme aims at acquainting the undergraduate and postgraduate students with the concepts of preventive and social medicine and familiarise them with rural environments. This will also enable them to study peculiar health problems of the rural areas.

Common exam for admission in Punjab medical colleges

Dr. Amrik Singh, Vice-Chancellor of Punjabi University and Dr. K.S. Gill, Vice-Chancellor of Guru Nanak Dev University at their meeting with the State Government officials held recently in Chandigarh decided to hold a common entrance examination for admission to the medical colleges at Amritsar, Patiala and Faridkot. It was felt that since the admissions to the three government medical colleges were open to candidates domiciled in Punjab irrespective of the university from which they had passed the pre-medical examination, the marks obtained by them could not be a common yardstick to judge their merit. The common examination would ensure a uniform assessment of merit of all the eligible candidates. These universities will hold the examination by rotation. Punjabi University will hold the entrance examination this year. The details of the proposed examination will be chalked out jointly by these universities.

Forum for students grievances suggested

The Union Education Ministry in its recent communication has advised the state governments to set up appropriate machinery for the redress of students' grievances. The communication requires that emphasis should be given to streamline admission procedures, timely recruitment of teachers and provision of appropriate machinery for improving student teacher relations. The Union Ministry has expressed its concern over unrest in the universities

which has forced many of them to close for long periods. The communication desires that the educational institutions should be free from politics. It has observed that in the past one year nineteen universities have been troubled by unrest and some of them have remained closed for months following violence in the campuses.

Nagaland campus of NEHU inaugurated

President, Shri N. Sanjeeva Reddy while laying the foundation stone of the Nagaland campus of the Northeastern Hill University urged universities to lay more emphasis on vocational education. The President said that Nagaland had a higher rate of literacy than other parts of the country though there were fewer educational institutions in the region. He asked the university authorities to open medical and engineering institutes to impart education in career courses to meet the needs of local people.

Chief Minister, Shri Vizol thanked the Centre for its liberal aid for development of Nagaland. He said the state government had donated 800 acres of land for development of the campus which would be a land-mark in higher education in the state.

Azad trophy for GND Varsity

Guru Nanak Dev University has been awarded the Maulana Abul Kalam Azad Trophy for the year 1976-77. The university had been runners-up since 1972-73 for the trophy. Dr. M.S. Sandhu, Head of the Department of Physical Education and Secretary of the Sports Council of the university said that the university was hopeful of retaining the trophy for the subsequent years. Dr. Sandhu said the performance of the university team in All-India Varsity Meet in the last two years had been better than the year for which they had been given the trophy.

President Shri N. Sanjeeva Reddy will present the trophy at a function to be organised at Rashtrapati Bhavan in the first week of March.

Madurai Seminar on cooperation among states

Madurai Kamaraj University organised recently a two-day seminar on Interdependence and Cooperation among States. Presiding over the seminar, Vice-Chancellor V.C. Kulandaiswamy stressed the significance of water in the economic development of states. He said that the dimensions of the problem and its inherent characteristics were such as to demand a national approach and an integrated solution. The problem arose not out of real deficiency in quantity but out of imbalance of distribution. As water is the most basic natural resources, the use of such a resource needs a 'national policy' and its declaration as a national resource. The strategy should include study of available water, the present use and future demand for each river basin and preparation of a master plan.

The inaugural address was delivered by Thiru N. Mahalingam. He said that in a vast country like India, which is noted for its natural resources of mines, minerals, forests and energy, harmonious economic developments were needed to remove the regional imbalances. He emphasised the need for a national water and power grid. He said that approach to taxation must be such that it did not stand in the way of either production or consumption. He was of the view that non-development expenditure would decrease with the adoption of decentralised administration. He suggested that the panchayat union constituency and the district development council could become coterminous with the Assembly and Parliamentary constituency respectively. He highlighted the need for balanced regional development and suggested the following plan of action:

- augment the free resources of the state governments;
- discretionary allotment in fiscal transfer should be kept within strict limits;
- constitutional provision for review of expenditure of central government for keeping the non-development

expenditure within the limits; and

—at least 50 per cent of state debts to centre to be written off.

He recommended mobility and migration of labour from one state to another.

Prof. K.S. Sonachalam, formerly of Annamalai University, explained the centre-state financial relations in his paper. He pleaded for provision of additional resources to the states for their development functions and safeguards to utilise public funds. Dr. Uma Chaudhury of the Union Ministry of Planning explained the income, consumption and inter-state flows in her paper. Dr. Sankar of Madras University presented a paper on energy and inter-state development.

The seminar highlighted the need for economic and social integration. The unanimous recommendations of the seminar included declaration of water as a national resource and provision of additional financial resources to the states. The seminar was significant in sensitising the students regarding the significance of interdependence and the need for integrated economy for harmonious, balanced and speedy economic growth.

Seminar on objectives of higher education

While addressing the seminar on 'aims and objectives of higher education' organised by the centenary celebrations committee of the St. Aloysius College in Mangalore, Prof. V.K.R.V. Rao, Director of the Institute of Economic and Social Change, Bangalore, stressed the need for fresh thinking among educationists on the constituents of higher education and its contribution to the betterment of masses. He said there should be a proper linkage between the university concept and community around it. Higher education should not be concerned merely with awarding degree and certificates.

Professor M.A. Ramachandra Rao, convener of the Committee announced that seminars on various aspects of education had been

planned as part of the institute's centenary celebrations.

Mr. T.A. Pai, former Union Industry Minister, called for determined efforts to eradicate illiteracy in the country. He cited the example of Cuba where illiteracy had been removed within a year.

Seminar on astronomy

While inaugurating the seminar on 'Astronomy as aid to history' at Ethiraj College, Madras recently, Professor G.R. Damodaran, Vice-Chancellor of Madras University outlined the significance of study of astronomy with its allied disciplines. He said the experts would study the crucial issues for a deeper and effective awareness of the subject. The Vice-Chancellor said that we were passing through the nuclear age to solar age and the scientist should put the spectacular discoveries being made for right uses. He made a reference to the astronomical data available in the ancient literature and said if the data were used correctly by scholars and their interpretations calculated with scientific precision, the study would aid historians to recast the dates of important ancient events.

Progress at AMU

The Aligarh Muslim University took a big step to meet the growing demand of experts in oil exploration by deciding to start the Institute of petroleum studies. The site for the location of the Institute has been selected and project reports are being prepared in consultation with Oil and Natural Gas Commission and the Indian Institute of Petroleum. The Institute will conduct two year postgraduate courses in oil prospecting, petro-chemicals, polymer technology and drilling. The Institute will receive a substantial grant, the first instalment of which was received on the Founder's Day. Preparatory to petroleum studies, a five-year chemical engineering course has been started. Students have already been admitted to the first year.

The university has improved its financial position during the

recent years as per report published in the university gazette. The progress made at the university has improved its image in the country as well as abroad. The university received thirty-one thousand applications last year for admission compared to sixteen thousand in 1975, twenty thousand in 1976 and twenty five thousand in 1977. On the research front there have been as many as six hundred successful theses for Ph.D. degree. There have been notable developments in the field of anatomy of brain, the chemistry of oil-seeds and enzymes and the formulation of drugs for heart diseases. The university has established a training and guidance centre for the benefit of candidates appearing in the all-India competitive examinations. The university sportsmen have been in the forefront. One of its former students, Govinda was the captain of the Indian hockey team which participated in the Asian Games at Bangkok. Another Alumni, Zafar-Iqbal was also a member of the hockey team.

UGC members

The Central Government has appointed seven new members of the University Grants Commission in place of those who retired recently. They are: Dr. Amallesh Tripathi, University of Calcutta; Prof. C.V. Subramaniam, Madras University; Mrs. Usha Mehta, University of Bombay; Prof. Ram Lal Parikh, MP and former Vice-Chancellor, Gujarat Vidya-peeth; Dr. A.R. Kidwai, former Chairman, UPSC; Mr. Justice H.R. Khanda, Chairman, Lal Commission and Mr. Mrinal Miri of North Eastern Hill University.

Development of scientific talent

Inaugurating the Central Instruments Laboratory of the University of Hyderabad recently, Dr. P.C. Chunder, Union Education Minister said that the government was keen to develop scientific talent in the country. The Union Government was encouraging setting up of scientific laboratories with sophisticated

equipment. The laboratories at Indian Institute of Technology, Bombay and Bose Technological Institute, Calcutta were set up to achieve this objective. Dr. Chunder stressed the need for interdisciplinary study in science and humanities.

Shri K.C. Abraham, Andhra Pradesh Governor presided over the function. He said that university education should not lay undue emphasis on the objectives of teaching, training and research without development of inner personalities of the student. The reason for prevailing unrest in universities was the erosion in intellectual and cultural values and absence of stress on development of individual.

Prof. Gurbakhsh Singh, Vice-Chancellor of the university said the sophisticated instrumentation facilities of the university would also be made available to outsiders involved in research.

Youth for development programmes

The Union Ministry of Education and Social Welfare has prepared a scheme to provide assistance to voluntary organisations to promote involvement of youth in developmental and educational programmes. Financial assistance will be given for mobilising youth for development activities particularly in the rural areas. The scheme envisages the youth taking up development activities in rural areas and in urban slums. Youth groups would also be assisted in devising innovative forms of artistic and cultural expressions to bring about social change. Voluntary bodies would be involved in imparting training to non-student youth for improving their functional skills for employment. The training to be given on a non-formal basis would not exceed a year. Short duration courses would be encouraged. Short duration youth leadership training programme ranging from a week to a month could be organised for non-student youth with special emphasis on the poor and deprived sections of the community. They would be expected to

act as catalysts to bring about social change.

National games inaugurated

Dr. P.C. Chunder, Union Minister for Education and Social Welfare, inaugurated the 25th national games at the Lal-Bahadur Stadium in Hyderabad recently. He advised the sportsmen to dedicate themselves to the task of achieving excellence in their disciplines to achieve laurels in international competitions. The Union Minister called upon the sports administrators to join hands for promotion of sports and games in the country. He said if sportsmen/sportswomen were given proper training, they would not lag behind in exhibiting their skill and merit.

Dr. M. Chenna Reddy, State Chief Minister who presided over the function announced that the government would provide two sports hostels in the tribal areas.

The executive committee of the Indian Olympic Association at its meeting commended the efforts of the Andhra Pradesh Olympic Association in organising and in contributing to the revival of the national games.

Workshop on water management

Prof. P. Sivalingam, Vice-Chancellor of Perarignar Anna University of Technology in his valedictory address at the workshop on water needs and management held recently in Madras suggested that water should be declared a national resource and concurrent plans should be initiated for development of rivers. He said unless water planning and management practices were improved, water shortage would impede the country's economic and social growth. He suggested that national state organisations responsible for water resource management should ensure that statistics on use and consumption of water were organised and improved. Pointing out that there was no institution to take an integrated look at the water problem.

The workshop has urged the formulation of a national policy

on water which should give priority attention to transfer of water to drought and scarcity areas. The workshop welcomed the establishment of the Institute of Water Studies by the Tamil Nadu State Government and suggested that the Institute should become the focal point for study on water management. It was recommended that priority should be given to save water that was wasted and results of the present water-use technology be disseminated to water users. Measures for water supply and waste disposal should rank high in the national plan. The preparedness to meet natural hazards should be established on a permanent footing. The workshop expressed the view that massive afforestation will be conducive to improve water management practices and environmental conditions.

The workshop was organised by the Institute for Techno-Economic Studies and sponsored by the Union Department of Science and Technology and College of Engineering, Guindy.

Medical research awards

The Medical Council of India has selected five eminent Professors for Hari Om Ashram Alembic Research Award 1978. The awards for basic Research in medical sciences have gone to: Dr. S.K. Manchanda, Head of the Department of Physiology, All-India Institute of Medical Sciences and Dr. Mahdi Hasan, Professor of Anatomy, J.N. Medical College, Aligarh. The recipients of the award in the field of applied research are: Shri K. Ramachandran, Head of the Bio-statistics Unit, All-India Institute of Medical Sciences; Dr. J.R. Srivastava, Head of Department of Pediatrics, G.S.V.M. Medical College, Kanpur; Dr. S.K. Mehta, Head of the Department of Gastroenterology, Postgraduate Institute of Medical Education and Research, Chandigarh.

Personal

Mr Kan Singh has been appointed Vice-Chancellor of the Jodhpur University.

A list of Doctoral Theses Accepted by Indian Universities

SOCIAL SCIENCES

Psychology

1. Abrol, Sunil. A study of relationship between body posture and work efficiency. University of Delhi.
2. Sreedhar, Krishna Prasad. Personality factors related to psychosomatic disorders. University of Kerala.

Anthropology

1. Prakash Reddy, Gundreddy. Cultural ecology of an island community: A case study of Chowra. Andhra University.
2. Roy, Sankar Kumar. A study of ceramic from neolithic to mediaeval period of Assam: An ethnoarchaeological approach. Gauhati University.
3. Sadanandan Nair, Kanhirapurzha. A regional community in an urban setting. University of Poona.

Sociology

1. Adivadhanasit, Pharamaha Chamnong. Buddhism and modernization. University of Madras.
2. Dharam Vir. Social background of college students in Nepal. Meerut University.
3. Nadgonde, Gurunath Dattatray. Human relations in cooperative sugar factories in Southern Maharashtra. Shivaji University.

Political Science

1. Batra, Ramesh Kumar. Working of the Municipal Corporation of Delhi 1958-71. Meerut University.
2. Chowdhary, Balbir Babadur. Jan Sangh as an opposition party in Fourth Lok Sabha: A behavioural and empirical approach. University of Delhi.
3. Kale, Suneeta Dattatraya. Parliament's role vis-a-vis the Home Ministry. University of Poona.
4. Kar, Makhanlal. Muslims in Assam politics. University of Calcutta.
5. Metkar, Ramkrishna Girdhar. Interrelations among the tiers in zilla parishads in Maharashtra. University of Poona.
6. Mohanty, Debadatta. Role of P.S.P. in Orissa politics. Sambalpur University.
7. Patel, Harbanskumar Bhailalbhair. India's national aspirations and Cripps offer. Sardar Patel University.
8. Ray, Sudhir Kumur. Opposition politics in West Bengal. University of Burdwan.
9. Sarma, Amrit Chandra. Administration of small scale industries in Assam with special reference to post-independence period. Gauhati University.

Economics

1. Bhatia, Basant Lal. Consumers Cooperative Stores in the urban areas of Meerut District. Meerut University.
2. Jayachandran, C. A study of growth and diversification patterns with particular reference to Coimbatore Engineering Firms. University of Madras.
3. Jhala, M. L. Supply and demand aspects of edible oilseeds and oils in India, 1951-71. Gujarat University.
4. Mehta, Parkash. Cropping pattern choice of Punjab farmers: An economic behaviour analysis. Indian Institute of Technology, Kanpur.
5. Singh, Lalprakpam Tombi. Manpower utilization in a developmental process: A case study of Manipur, 1951 to 1971. University of Poona.

6. Vijayavani, Kotcherlakota. Estimation of CES function and technical progress in Indian manufacturing industries, Andhra University.

7. Vlassoff, Carol Kathleen. Significance of cultural tradition for contraceptive change: A study of rural Indian women. University of Poona.

8. Vlassoff, Michael Albert. Economic motives and fertility in an Indian village. University of Poona.

Law

1. Singh, Jai Narain. India's "exercise of self-defence:" A legal appraisal of the 1971 war in the Indian subcontinent. University of Delhi.

Education

1. Goel, Sushma. Behaviour flow patterns of extrovert and introvert teachers in class room at Secondary level. Meerut University.

Commerce

1. Begde, S. K. State budgetary allocation for Higher Education in Madhya Pradesh. Bhopal University.
2. Kadvekar, Shripad Vinayak. Management of co-operative spinning mills in Maharashtra. University of Poona.
3. Mijibar Rehman, Abu Rehman. A study on agricultural marketing in Assam with special reference to autumn paddy and jute. Gauhati University.
4. Saraf, Bhagawati Prasad. Capital taxation in India. Gauhati University.
5. Satya Pal. Role of foreign trade in India's economic development since 1961. Meerut University.

Management

1. Sarwate, Dilip Madhav. Pre-investment decisions of proposed new enterprises. University of Poona.

Home Science

1. Chittemma, Maineni. Development and evaluation of nutrition material for non-formal education of rural women. University of Madras.
2. Sharma, Adarsh. Development of prejudice in young child: An empirical study in New Delhi. University of Delhi.

HUMANITIES

Philosophy

1. Aminul, Haque. Some linguistic problems about private experience. University of Burdwan.
2. Dutta, Tapash Sankar. A study of the philosophy of Vivekananda with special reference to Advaita Vedanta and Great Universal Heart of Buddha. Gauhati University.
3. Gaur, Ved Prakash. Existentialism and Indian thought with special reference to the concept of being in Gabriel, Marcel and Vedanta. University of Delhi.
4. Gopalakrishnan, R. Religion and mysticism in the Periyapuram. University of Madras.
5. Roberts, H. R. A study of the Wittgensteinian philosophy of religion. University of Madras.
6. Santokh Singh. Philosophical foundations of the Sikh value system. University of Poona.
7. Shanmugam, M. Saiva Siddhanta and the social philosophy of St. Ramalingam. University of Madras.

Linguistics

1. Narasimha Murthy, Ayyagari. Historical grammar of middle Telugu with special reference to the work of Kavitraya. University of Poona.

Literature

English

1. Agarwal, Sushma Rani. Theme and vision in the plays of Tennessee Williams. Meerut University.
2. Barnbas, Sarala Joseph. Some perspectives on the American drama of the depression decade, 1929-1939. University of Poona.
3. Gupta, Om Prakash. Evolution of radical consciousness in the novels of Bernard Malamud. Meerut University.
4. Jain, Shyam Lata. Nature in the works of the Bronte sisters. Meerut University.
5. Sahu, Narayan Singh. Social protest in serious plays of Maxwell Anderson and Robert E. Sherwood: A comparative study. Ravishankar University.
6. Singh, Braj Deo. Nature in Victorian fiction: A study of five major novelists. Gauhati University.

Sanskrit

1. Bhattacharyya, Syamapada. An evaluation of the topics of Sanskrit Dramaturgy from the times of Bharata to Dasarupka. University of Burdwan.
2. Bindra, Trilochan Singh. Rigved ke Dasham Mandal ka samikshatmak adhyayan. Meerut University.
3. Deshmukh, Pratibha Ganpatrao. Concept of Vac in the Vedic literature. University of Poona.
4. Gangopadhyay, Ananta Lal. Panditaraja Jagannatha on asthetic problems. D.Litt. University of Burdwan.
5. Sharma, Mahesh Chandra. Mahakavi Chandrashekhar dwara praneet Surjancharit Mahakhvya ka alochnatmak adhyayan. Meerut University.
6. Thatte, Anuradha Arun. A critical study of the concept of God in the Vedanta system. University of Poona.
7. Tyagi, Shyama Devi. Vayu Puran ke akhyan. Meerut University.

Hindi

1. Agrawal, Manorma. Ghanand ke kavya mein aprastut vidhan. University of Delhi.
2. Bhargava, Shobha. Sri Hari Ram Vyas: Vyaktitv aur kratitv. Meerut University.
3. Mangla, Raj. Hindi upanyason mein kathanak ruriyan upto 1960. University of Delhi.
4. Mohapatra, Raghunath. Oriya aur Hindi Krishna kavya ka tulnatmak adhyayan. 16 century. Utkal University.
5. Nautiyal, Shiva Nand. Garhwal ke loknirtyatmak geeton ka sankritak adhyayan. Meerut University.
6. Prathamvir, Jhama Singh. Hindi ka Kundaliya Chhand aur sahitya. University of Poona.
7. Raj Kumari. Pant ke saundarya chetna ka vikas. University of Delhi.
8. Seshamamba, Korlipara. Age consciousness in modern Hindi prabandh kavyas, 1900-1970. Andhra University.
9. Sesharatnamma, N. A comparative study of Hindi and Telugu modern lady poets. Andhra University.

10. Sharma, Radha Ballabh. Kavi Gangadhar aur unka kavya. Awadhesh Pratap Singh University.

11. Sharma, Rajendra Kumar. Prem Chand Parampara ke kathakaron ke kahaniyon mein pariwarik evam samajik chitran. Ravishankar University.

12. Sharma, Trilok Chandra. Swatantryottar Hindi kavita mein yug chetna. Meerut University.

13. Sharma, Ved Prakash. Dakshini ka gadyatmak sahitya. D.Litt. Meerut University.

14. Singh, Rama Rani. Dinkar ke sahitya mein vyaktitv ke abhivyakti. Meerut University.

15. Srivastava, Suman Lata. Kalidasa aur Prasad ke natakon mein saundarya bodh: Ek tulnatmak adhyayan. Meerut University.

Urdu

1. Anwar, Nasim. Molvi Abdul Haw: Life and work. Meerut University.

Bengali

1. Shaikh Sirajuddin Ahmed. Rabindaranather bhasa-tatvik chinta. University of Calcutta.

Tamil

1. Kandaswamy, N. A critical study of Narrinai. University of Madras.
2. Rajukumar, M. D. Social life in the period of later Cholas. University of Madras.
3. Vellingiri, K. A critical study of Villibharatham. University of Madras.

Telugu

1. Murali Krishna, Dendukuri. Impact of Kalidasa on classical Telugu literature. Andhra University.

Geography

1. Diddee, Jayamala Navalkishore. A study of central places in the Upper Bhima Basin. University of Poona.
2. Sharma, Phool Chand. Morphology of hilly towns: A case study of Himachal Pradesh. Meerut University.
3. Singh, Arun Kumar. Urbanization and administration of urban infrastructure: A case study of five selected cities of West Bengal. University of Burdwan.

History

1. Agarwal, Ram Sewak. Important trade centres and routes in Northern India, C.322 B.C.—A.D.C. 500. Meerut University.
2. Gauri, Gulab Khan, Gwalior ka rajnaitik evam sanskritik aitihas san 1362 se 1565 tak. (Hindi) Jiawaji University.
3. Ghatapanadi, S. G. Taxation in Ancient and Mediaeval Karnataka. Karnatak University.
4. Ghosh, Partha Sarathy. American perception of the Sino-Soviet relations, 1949-1959. Jawaharlal Nehru University.
5. Krishna Sastri, V. V. Proto and early history of Karimnagar Region in Andhra Pradesh. Karnatak University.
6. Mangalam, S. J. Studies in the historical and cultural geography and ethnography of Andhra Pradesh upto 1200 A.D. University of Poona.
7. Sharma, Rajendra Prasad. Trivikrama Bhatta and his times. Meerut University.

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- Harrison, Frank R. "Caveat Emptor". *Educational Record* 59(4); Fall 78: 388-98.
- Mitra, Shib K. "Education for non-violence". *University News* 16(24); 15 Dec 78: 1307-8, 1313.

EDUCATIONAL PSYCHOLOGY

- "EDUCATION OF handicapped adolescents". *OECD Observer* (94); Sep 78: 15-16.
- Mohta, Nirmla. "Need for achievement in student activist". *University of Udaipur Research Journal* 13; 1975: 62-7.

EDUCATIONAL SOCIOLOGY

- Ahmad, Karuna. "Towards a study of education and social change". *Economic and Political Weekly* 14(4); 27 Jan 79: 157-64.
- Forstenzer, Thomas. "Economic crisis, universities and students in Western Europe". *Prospects* 8(3); 1978: 283-92.
- Gill, Sucha Singh. "Struggle of unemployed teachers". *Economic and Political Weekly* 14(3); 20 Jan 79: 96-8.
- Sharma, Motilal. "Education for optimising vocational mobility". *University News* 17(3); 1 Feb 79: 63-5.

EDUCATIONAL PLANNING

- Lamarra, Norberto Fernandez and Agnerrondo, In'es. "Some thoughts on educational planning in Latin America". *Prospects* 8(3); 1978: 352-61.
- Shukla, P. D. "Magical formulae of education (10+2+3 or 8+4+3 or 7+5+3)". *Education Quarterly* 30(3); Oct 78: 19-20.
- Uehling, Barbara S. "Meeting the demands of the future". *Educational Record* 59(4); Fall 78: 377-87.
- Weiler, Hans N. "Towards a political economy of educational planning". *Prospects* 8(3); 1978: 247-67.

EDUCATIONAL ADMINISTRATION

- Bhiday, M. R. "University procedures for providing grants to teaching departments". *University News* 17(4); 15 Feb 79: 92-8.
- El-Khawas, Elaine H. "Solving problems through self regulation". *Educational Record* 59(4); Fall 78: 323-31.
- George, Melvin D. and Braskamp, Larry A. "Universities, accountability, and the uncertainty principle". *Educational Record* 59(4); Fall 78: 345-66.
- Kozma, Robert B. "Faculty development and the adoption and diffusion of classroom innovations". *Journal of Higher Education* 49(5); Sept-Oct 78: 438-49.
- Lonsdale, Alan J. "Open learning systems for university staff development". *Bulletin of the Unesco Regional Office for Education in Asia and Oceania* (19); June 78: 164-73.
- O'Toole, James. "Tenure; A conscientious objection". *Change* 10(6); June-July 78: 24-31.
- Smart, John C. "Diversity of academic organisations: Faculty incentives". *Journal of Higher Education* 49(5); Sept-Oct 78: 403-19.
- Van Alstyne, William W. "Tenure: A conscientious objective". *Change* 10(9); Oct. 78: 44-7.

TEACHING

- "NEW TRENDS in teacher training". *OECD Observer* (94); Sep 78: 16-8.

- Rai, Urmila. "English language teaching: Some problems". *University News* 16(24); 15 Dec 78: 1312-3.

- Skatkin, M. N. and Kraevsky, V.V. "Research into the art of teaching in the U.S.S.R., and ways of applying its findings in practice". *Prospects* 8(3); 1078: 268-81.

- Wood, G. R. "Self-instruction in universities: Account of an experiment". *Bulletin of the Unesco Regional Office for Education in Asia and Oceania* (19); June 78: 174-78.

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- Nakano, Terumi. "Educational technology and open education". *Bulletin of the Unesco Regional Office for Education in Asia and Oceania* (19); June 78: 179-86.

EVALUATION

- Cranton, P. A. and Legge, L. H. "Programme evaluation in higher education". *Journal of Higher Education* 49(5); Sep-Oct 78: 464-71.

- Julka, Satyapal. "Teaching and testing language/literature by objectives". *University News* 16(24); 15 Dec 78: 1309-11, 1326.

- Smock, H. Richard and Brandenburgs Dale C. "Student evaluation of academic programmes". *Journal of Higher Education* 49(5); Sep-Oct 78: 489-503.

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INDIAN INSTITUTE OF TECHNOLOGY : DELHI HAUZ KHAS, NEW DELHI-110029

Advertisement No. 9/79

Applications are invited for appointment to the following positions in the Institute:

1. Chemical Engineering Department PROFESSOR

Scale : Rs. 1500-60-1800-100-2000-125/2-2500

Qualifications

Good Master's Degree/Doctorate Degree in appropriate field with minimum 7 to 10 years' distinguished experience in teaching/research in an Institution of University Standard at Post-Graduate level. Specialised knowledge in one or more specified fields with experience in guiding research. Professional/Scientific work of outstanding merit and Doctorate Degree would be preferred.

Field of Specialisation

Chemical Reaction Engineering (Reactor Modelling and Analysis), Process Dynamics and Control, Transport Phenomena, Polymer Engineering and Process Plant Design.

2. Bio-Chemical Engineering Research Centre

(a) ASSISTANT PROFESSOR

Scale: Rs. 1200-50-1300-60-1900

Qualifications

Good Master's Degree/Doctorate Degree in appropriate field with minimum 5 years' experience in teaching/research in Institution of University Standard. The experience must include research/industrial experience of not less than 2 years. Specialised knowledge in one or more specified field/subject with outstanding teaching/research experience and Doctorate Degree or published work of equal standard would be preferred.

Field of Specialisation

Microbiological Engineering Enzyme Engineering, on-line programmed analysis of process variables and Computer aided design of bioreactor evidenced by adequate research publications. First Class Bachelor's Degree in Chemical Engineering/Food and Biochemical Engineering with Ph.D. in Chemical or Biochemical Engineering from a recognised University is required.

Applied Microbiology with Microbial Biochemistry and Genetics or Enzyme Technology as special area evidenced by adequate research publications. First Class M.Sc. Degree in Microbiology/Mol. Biology with Ph.D. in Biochemical Engg./Microbiology from recognised University is required.

(b) LECTURER

Scale: Rs. 700-40-1100-50-1600

Qualifications

Good Master's Degree in appropriate field with 2 years' research/industrial experience in any Institution of University Standard/Establishment of repute. Doctorate Degree or published work of equal standard preferred.

Field of Specialisation

Microbiological and bioconversion

processes with some research publications. First Class Degree in Chemical Engineering/Food and Biochemical Engg./Applied Microbiology from recognised University is required-

(c) RESEARCH ASSOCIATE

Scale: Consolidated amount between Rs. 700/- and Rs. 1100/- p.m.

Qualifications

First Class degree in Microbiology/Microbial Bio-chemistry/Genetic Engg./Biochemical Engg. with Ph.D. in Microbiology / Chemical / Biochemical Engineering. Teaching and Research experience in the general field of Biochemical Engineering, Waste Treatment, Industrial Microbiology will be considered as an additional qualifications.

GENERAL

Prescribed application forms may be obtained from the Office Superintendent (Estt. I), Indian Institute of Technology, Hauz Khas, New Delhi-110029 either in person or by sending a self-addressed stamped envelope (10 x 23 cm) bearing postage stamps of 25p. Candidates from abroad may apply on plain paper giving an account of their academic and professional record, acquainted with their professional work. Candidates selected for appointment will be required to join duty immediately or as soon as possible thereafter.

Candidates called for interview will be paid second class railway fare from the place of their duty to Delhi and back by the shortest route.

Last date of receipt of request for application forms is 13.3.1979.

Last date of receipt of completed applications forms alongwith attested copies of certificates/testimonials etc. together with a crossed Indian Postal Order for Rs. 7.50 (Rs. 1.87 for SC/ST Candidates) is 20.3.1979 (4.4.1979 for candidates from abroad).

Persons employed in Govt./Semi-Govt. Organisations / Autonomous Bodies should submit the applications through their employer.

JAWAHARLAL NEHRU UNIVERSITY NEW DELHI-110067

Advt. No. Aca. III/2/79

Applications are invited for the post of an Associate Professor/Fellow in Gulf Studies in the Centre for West Asian and African Studies, School of International Studies of the University, in the scale of pay of Rs. 1200-50-1300-60-1900 plus usual allowances as admissible to the members of the staff in the Central Universities.

QUALIFICATIONS

Essential

1. Consistently good academic record with atleast high second class Master's degree in Economics or an equivalent qualification from an Indian/Foreign University.
2. A Doctor's degree or published work of an equally high standard relating to international trade/

economic development with experience in applied work.

3. About 5 years' teaching and/or research experience.

Desirable

1. Experience of supervising research relating to International trade/Economic Development.
2. Special interest in economic problems of West Asian Gulf countries.

Relaxation in any of the qualifications may be made (a) in favour of persons of eminence or of high academic professional distinction, and (b) in exceptional cases where adequately qualified persons are not available but are otherwise found suitable for the respective positions. It will also be open to the University to consider the names of suitable candidates who may not have applied.

The selected candidates will be expected to participate in the teaching and research programmes in the concerned disciplines in other Schools of the University as well as in the programmes offered in their own Schools.

Normally appointment of Fellows is made on contract basis for a period ranging from one to three years.

Benefits of CP Fund-Cum-Gratuity/GP Fund-Cum-Pension-Cum-Gratuity are available as per University rules.

Persons already in employment should route their applications through proper channel.

Second class (mail) rail fare (both ways) will be paid to candidates invited to appear for interview from outstation by the shortest route subject to the production of rail receipt.

Applications, separate for each post, on the prescribed form, obtainable free of cost from the University by sending a self-addressed and stamped envelope 23cm x 10cm size to the Deputy Registrar (Acad.) Jawaharlal Nehru University, New Mehrauli Road, New Delhi-110067 should reach him latest by 17th March 1979 (superscribing on the envelope the post for which form asked for).

Candidates from abroad, applying for faculty positions, may apply on plain paper, (but their applications should reach the University by the last date) furnishing all the relevant information such as their names, date and place of birth marital status; nationality; state of domicile; postal and permanent addresses; father's name and address; academic and professional attainments; full details of (a) publications, and (b) research Projects undertaken; language (s) known; details of visits to foreign countries; and the names and addresses of at least two persons well acquainted with the candidates professional work who should also be requested by the candidate to forward to the DEPUTY REGISTRAR (ACADEMIC) Confidential Report concerning the candidate.

PUNJABI UNIVERSITY PATIALA

(Advt. No. 254/PRO/Estt./79)

Applications are invited for the following posts:

1. **Reader in Botany : One**
(Rs. 1200-50-1300-60-1900)

Qualifications

- a) Good academic record with a doctoral degree or equivalent published work. Evidence of being actively engaged in (i) research or (ii) Innovation in teaching methods or (iii) Production of teaching materials.
- b) About 5 years experience of teaching and/or research provided that at least three of these years were as Lecturer or in an equivalent position. This condition is relaxable in the case of candidates with outstanding research work.

Specialisations

Plant Ecology/Angiosperm Taxonomy.

2. **Junior Research Fellows (U.G.C.)**
(Two each in Physics & Mathematics, Astronomy and space sciences & One each in Botany, Chemistry & Human Biology)
Rs. 400/- p.m. all inclusive for first two years and Rs. 500/- p.m. all inclusive for subsequent two years).

Qualifications

Junior Fellowship is open to persons preferably below the age of 30 years, who have obtained a Master's degree of a recognised University in the first or high second division (with atleast 55% marks or B in the seven point grade system.)

3. **Senior Research Associates in Research Centre in Physical Education (Three)**
(Rs. 700-40-1100-50-1600).

(i) Yoga (One)

M.Sc. (Physiology), Ph.D. in exercise Physiology or equivalent published research work in the said field with training in physiological techniques for the study of effects of Yoga. The candidate should possess a minimum of 3 years' research experience. Preference will be given to those who are conversant with the handling of oscilloscope and polygraphs and are actively engaged in research in the field of work physiology with special reference to sportsmen.

(ii) Physiology (One)

M.Sc. (Human Biology), Ph.D. in exercise Physiology or equivalent published research work in the said specialization and a minimum of 3 years' research experience. Preference will be given to those who are actively engaged in research in the field of sports and exercise physiology.

(iii) Morphology (One)

M.Sc. (Human Biology), Ph.D. in Anthropometry / Morphology or equivalent published research work in this specialization with at least

3 years' research experience. Preference will be given to those who have the experience of working on sportsmen.

General

Higher start within the grade admissible depending upon the ability and experience of the candidate. House rent and Dearness allowance, Provident Fund and Medical facilities according to the University rules.

Applications, complete in all respect on the prescribed form, accompanied by a crossed postal order worth Rs. 5/- (Rs. 2/- for candidates belonging to Scheduled Castes/Tribes and Backward Classes) drawn in favour of the Registrar, Punjabi University, Patiala should reach the university by 15-3-79. The forms can be had from the Superintendent (Establishment) by sending a self-addressed envelope of the size of 23x10 cms stamped with 25 paise postage.

Persons already in service should apply through proper channel; Govt. servants who are not in a position to submit their applications through proper channel before the due date should submit an advance copy before the due date and regular applications through proper channel by 19-3-79.

REGISTRAR

SAMBALPUR UNIVERSITY

JYOTI VIHAR : BURLA

Advertisement No. 2653/TDS

Dated 12.2.79

Applications in the prescribed forms are invited for the following teaching posts in the University Post-Graduate Departments at Jyoti Vihar, Burla.

1. **Professor** : One each in Economics, Home Science and Statistics.
2. **Reader** : Two in Anthropology Sociology, One in Home Science.
3. **Lecturer** : One each in Anthropology and Sociology Library and Information Science, Chemistry and Statistics.

II. Scale of Pay

Professor —Rs. 1500-60-1800-100-2000-125/2-2500.

Reader —Rs. 1200-50-1300-60-1900.

Lecturer —Rs. 700-40-1100-50-1600.

III. All the posts carry usual dearness allowances and C.P.F. cum-gratuity benefits as would be determined by the University from time to time.

IV. The age of retirement is sixty years.

V. Qualifications

LECTURER

- (i) A consistently good academic record with first or high second class Master's Degree in relevant subject or Equivalent foreign Degree with grade B+ or 55% of marks.
- (ii) A Doctorate Degree of Published work of equally high standard.

In case of suitable candidate possessing a Doctorate Degree or equivalent published work is not available, a person possessing a consistently good academic record (due weightage being given to M.Phil or equivalent degree or research work of quality) may be appointed on the condition that he will have to obtain a Doctorate Degree/Produce evidence of published work of equivalent high standard within 5 years of his appointment failing which he will not be able to earn future increments until he fulfils this requirement.

READER

- (i) Good academic record with a Doctorate Degree or equivalent published work.
- (ii) Evidence of being engaged actively in research.
- (iii) Five years experience of teaching and/or research out of which at least three years shall be as lecturer in the University Department/College at P.G. Level.

PROFESSOR

- (i) An eminent scholar with published work of high quality and actively engaged in research.
- (ii) Minimum experience of 10 years in teaching and/or research out of which at least 5 years must be in teaching at Post-graduate level as a full time teacher.
- (iii) Experience in guiding research at Doctoral level. A professor may be appointed on contract basis for a specified period.

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge may be appointed as Professor by negotiation.

(VI) Specialisation required.

Professor Statistics: Inference/Stochastic Processes/Operation Research/Information theory/Probability theory/Sampling theory and design of experiments.

Reader in Anthropology and Sociology One in Sociology with specialisation in Social Psychology and one in Anthropology.

Lecturer in Library and Information Science : M.Lib. Science with a minimum of 55% marks of M.Sc. or M.A. with 55% marks in any subject with B.Lib. Science first class or 3 years experience in a Library in a responsible profession and capacity.

Seven copies of the application forms will be supplied from the University Office to each candidate in person on cash payment of Rs. 10/- (Rupees ten) only. Candidates intending to receive forms by post are required to send (a) Crossed Postal Order of Rs. 10/- payable to the Finance Officer, Sambalpur University, Jyoti Vihar, Burla (b) a self-addressed envelope (23 cm x 10 cm) with postage stamps worth Rs. 3.30 P. affixed to it with the words "APPLICATION FORM FOR TEACHING POSTS IN SAMBALPUR UNIVERSITY" supercribed on it. Money order/

Cheque will not be entertained.

The last date of receipt of applications in the office of the University at Jyoti Vihar, Burla, Sambalpur (Orissa) is 10.3.79. The candidates will be required to appear for an interview before a Selection Committee at their own expenses.

Issue of this advertisement does not make it binding on the University to make the appointment.

All communications should be addressed to the Registrar by designation only.

G. P. Guru
REGISTRAR

INDIAN INSTITUTE OF TECHNOLOGY KHARAGPUR

Advertisement No. R/1/79

Applications are invited for the undermentioned posts at the Indian Institute of Technology, Kharagpur, West Bengal :

1. Posts

I. PROFESSOR

Scale of Pay

Rs. 1500-60-1800-100-2000-125/2-2500 plus D.A. as admissible.

Age : Preferably below 50 years.

Qualifications

Essential

- 1) A good academic record with a Bachelor's or Master's degree in the appropriate branch and a Doctorate degree.
- 2) Twelve years experience in the field of specialisation prescribed, of which at least 5 years should be in teaching and/or research.
- 3) Published research work of good quality in journals of repute.
- 4) Experience in guiding research.

Desirable

- 1) Experience of teaching post-graduate classes.
2. Good design and/or industrial experience.

N.B. If a person is not found suitable for the post of Professor he may be offered the post of Associate Professor in the grade of Rs. 1500-2000.

Vacancies & Specialisation

- i) **Computer Centre (One post)**
Specialised knowledge in system hardware/system software/application software.
- ii) **Material Science Centre (One post)**
Specialisation in one or more of the following fields:
 - a) Semiconductor, opto-electronics materials and devices,
 - b) Optical, electrical and/or magnetic ceramics and glasses,
 - c) Synthesis/Processing, fabrication and/or characterisation of polymeric materials,
 - d) Powder metallurgy, phase transformation, strengthening processes, high temperature and high strength alloys,
 - e) Composite materials.
- iii) **Mechanical Engineering (Three posts)**
Specialisation in one or more of the following fields :
 - a) **Production Engineering**
 - i) Metal Cutting and Mechanic

Tool (ii) Metal Forming (iii) Welding (iv) Modern Methods of Manufacture (v) Foundry Engineering

b) Applied Mechanics

- i) General Mechanical Handling System (ii) Instrumentation & Control System (iii) Fluid Power (iv) Vibration and Mechanism (v) Design Engineering.

c) Thermal Engineering

- i) Thermal System design (ii) I.C. Engines and Turbo-machinery (ii) Thermodynamics and Refrigeration (iv) Energy System and nuclear power (v) Heat transfer and fluid mechanics.

iv) Metallurgical Engineering (One post)

Specialisation in one or more of the following fields : a) Ferrous Extractive Metallurgy/b) Non-ferrous Extractive Metallurgy/c) Corrosion.

v) Physics (Two posts)

Specialisation in one or more of the following fields:

a) **Mathematical Physics:** Preferably in quantum mechanics and relativity with applications to semiconductor physics.

b) **Theoretical Solid State Physics:** Preferably Lattice vibrations and thermodynamical Properties of solids.

c) **Experimental Solid State Physics:** Preferably crystal growth, crystal optics, thin-film physics etc.

II. PROFESSOR : Rural Development & Social Service (One post)

Scale of Pay

Rs. 1500-60-1800-100-2000-125/2-2500. plus D.A. as admissible.

Age: Preferably below 50 years.

Qualifications: Essential

i) First class Master's Degree/Doctorate Degree in Engineering and Technology/Architecture & Regional Planning/Science or Social Sciences. A minimum of 10 years experience in teaching at Post-graduate level in an Institution or University standard and research or development work. ii) Experience in rural studies and/or of organising rural development activity for more than 5 years. iii) Coordination of NCC/PT/NSS Programme; Students' participation in rural development work, students' affairs and welfare, field camp management, participation of co-curricular and extra-curricular activities. iv) Training and experience in Social Welfare activities for more than five years.

Desirable

- a) Research publications in reputed journals relevant to rural development work.
- b) Experience in guiding research on rural development.
- c) Ability to organise and implement N.S.S. and Rural Development programmes. Administrative experience in NSS work.

III. ASSISTANT PROFESSOR

Scale of Pay

Rs. 1200-50-1300-60-1900. plus D.A. as admissible.

Age : Preferably between 30 and 45 years.

Qualifications: Essential

(i) A good academic record with a Bachelor's or Master's degree in the appropriate branch and a Doctorate degree. (ii) Seven years' experience in the field of specialisation prescribed, of which at least 2 years should be in teaching and/or research.

Desirable

(i) Published research work of good standard. (ii) Experience in guiding research.

Vacancies & Specialisation

(i) Chemistry (One post)

Specialisation in Inorganic and/or Organic Chemistry.

(ii) Material Science Centre

(Three posts)

Specialisation in one or more of the following fields:

- (a) Semiconductor, opto-electronics materials and devices/b) Optical, electrical and/or magnetic ceramics and glasses/c) Synthesis/processing, fabrication and/or characterisation of polymeric materials/d) Powder metallurgy, phase transformation. Strengthening processes, high temperature and high strength alloys/e) Composite materials. (Candidates who applied against advertisement no. R/18/76 need not apply again.)

(iii) Electrical Engineering (Three posts)

Specialisation in any one or more of the following fields:

- (a) Electrical Machines/b) Power System / c) Control System Engg./d) Instrumentation.

(iv) Cryogenic Engg. Centre (Three posts)

Specialisation in any of the following fields :

Refrigeration and air conditioning plant design, Electronic system design cryogenic instrumentation/ design of low temperature gas separation plant.

(v) Mechanical Engineering (Three posts)

Specialisations same as stated in the case of Professors in para I (iii) above.

Candidates who applied against advertisement no. R/29/77 need not apply again.

IV ASSISTANT PROFESSOR

(LIAISON OFFICER) Industrial Consultancy Centre -1 temporary post of 2 years duration in the first instance likely to continue.

Scale of Pay and Age

As stated in the case of Assistant Professors in para III. above.

The qualifications for this post are as stated above for Assistant Professor in any branch of engineering or technology. The person recruited shall assist the Dean of Sponsored Research & Consultancy in organising the Industrial Consultancy Centre of the Institute. He will also be the Liaison Officer between the industries the region and the Institute with a view to promoting consultancy activities.

V. Humanities & Social Science (One post for Hindi)

Scale of Pay and Age

As stated in the case of Assistant Professors in para III above.

A good Master's degree in Hindi/English with a doctorate degree in Hindi is essential.

Seven years experience in the field of specialisation of which at least two years should be in teaching and research. Ability to translate official documents, technical and non-technical reports, teaching materials from English to Hindi.

Desirable

Familiarity with modern methods of teaching language.

In addition to the normal teaching & research activities, the selected candidate will be required to a) to teach Hindi those who want to learn the subject and b) to assist the Institute in connection with translation work of Annual Accounts/Audit Reports and other material as may be required into Hindi.

VI. LECTURER

Scale of Pay

Rs. 700-40-1100-50-1600. plus D.A. as admissible.

Age : Preferably between 25 and 30 years.

Qualifications Essential

- (i) A good academic record with a Master's degree in the appropriate branch. (ii) Two years' professional experience.

Desirable

A Doctorate degree.

Vacancies & Specialisation

- (i) **Chemistry (One post)**
Specialisation in Physical Chemistry. Preferably with working knowledge in Rubber/High Polymer Technology.
- (ii) **Electrical Engineering (One post)**
- (iii) **Cryogenic Engg. Centre (One post)**
Specialised knowledge in any of the following fields:
Research/industrial experience in Heat and Mass Transfer/Cryogenic Engineering / Low Temperature Physics.
- (iv) **Material Science Centre (Two posts)**
Specialisation in (i) Semiconductor, opto-electronics materials and devices. (ii) Optical, electrical and/or magnetic ceramics and glasses. (iii) Synthesis/Processing, fabrication and/or characterisation of polymeric materials (iv) Powder metallurgy, phase transformation, strengthening processes, high temperature and high strength alloys (v) Composite materials.
- (v) **Physics (Three posts)**
Specialised knowledge in one or more of the following fields:
(i) X-Rays & Structure of matter (ii) Experimental Solid State Physics (iii) Nuclear Physics (iv) Instrumentation involving LASERS, X-Rays, electron optics etc.

VII. DEPUTY REGISTRAR (ADMINISTRATION)

Scale of Pay

Rs. 1100-50-1600. plus D.A. as admissible.

Age : Between 35 and 45 years.

Qualifications : Essential

- (i) At least a high Second Class Master's degree in Arts, Science, Com-

merce or Business Administration./ii) Considerable Administrative experience in a responsible position in residential colleges and Institutes./ (iii) Experience in handling Agenda, Minutes and procedure of Meetings./iv) Capacity to develop corporate life within an Educational Institute./v) Conversant of labour laws and other Civil Service rules./vi) Experience in recruitment & establishment matters./vii) Experience in dealing with various service and labour problems including negotiation with Employee's Union etc. Particularly in Higher Educational Administration.

VIII. ENGINEER (Audio Visual Cell) One post

Scale of Pay

Rs. 700-40-1100-50-1300. plus D.A. as admissible.

Age : Between 30 and 45 years.

Qualifications: Essential

- (i) Bachelor Degree in Electronic & Electrical Communication Engg. or equivalent. (ii) At least 5 years' experience in repair, design, fabrication, development and production of Audio Visual equipment and entertainment electronics.

Desirable

Experience in servicing and repairing sophisticated equipment related to Audio Visual Unit.

IX. SENIOR ENGINEER (Electronics) C.I.S.S. One post.

Scale of Pay :

Rs. 1100-50-1600. plus D.A. as admissible.

Age : Between 30 and 45 years.

Qualifications: Essential

- (i) Master's Degree with Electronics as special subject/Radio Physics/Applied Physics or Degree in : a) Electronics & Electrical Communication Engg. or/b) Electrical Engg. with specialised training in Electronics of a recognised University or c) Diploma of the Indian Institute of Science, Bangalore or its equivalent.
- (ii) At least five years' experience in repair, design, development and production of electronic electrical and other instruments in an establishment of repute.

Desirable

- (i) Adequate experience in design and fabrication of electronic research equipment including printed circuit board, and I.C. Circuits
- (ii) Experience in servicing and repairing sophisticated electronic instruments/equipments like Electron Microscope, X-ray Diffractometer, Electron Microprobe Analyser, etc.

X. COMPUTER CENTRE (ENGINEERS) 3 posts

Scale of Pay

Rs. 700-40-1100-50-1300. plus D.A. as admissible.

Age : Preferably between 25 and 38 years.

Qualifications

Bachelor's degree in Electrical or Electronic Engineering with at least 3 years' experience in maintenance, design and/or development on a

modern Computer System.

XI. COORDINATOR (Training & Publication) — National Service Scheme Unit

Scale of Pay

Rs. 1100-50-1600. plus D.A. as admissible.

Age : Preferably below 45 years.

Qualifications & Experience

- (i) Engineering / Science graduate with a degree or diploma in Social Work/Public Relations. (ii) Field experience in Camping and in Rural Development Work. (iii) Experience in organising seminars, training courses etc., (iv) Experience in print-production of various types booklets, brochures, bulletin, journals etc., with sound knowledge of printing processes and techniques as well as of typographic design, layout, estimating & costing.

Ability for handling and coordinating all production aspects.

Job Requirements

To plan and organise various training activities refresher courses, seminars etc; to participate in the NSS programme activities of the Institute; to prepare and publish the guidance and other information materials on various aspects of the NSS programme to develop demonstration projects for the NSS programmes and to provide on the spot guidance through personal visits to camps whenever necessary.

XIII. SENIOR RESEARCH ASSISTANT

Scale of Pay

Rs. 550-25-750-EB-30-900. plus D.A. as admissible.

Age: Preferably below 30 years.

Vacancies

- (i) **Material Science Centre —(2 posts)**

Essential :

- (i) A good academic record with Master's degree in Chemistry/Physics or D.Tech. M.Tech. degree in ceramics/Silicate Technology/Metallurgy / High Polymer & Rubber Technology/Chemical Engg.
- (ii) Research experience for at least two years for M.Sc. and one year for B.Tech candidates.

Desirable

- (i) Doctorate degree in respective subject.
- (ii) Familiarity with modern instrumental techniques.

Duty : To assist in the documental research work and to conduct laboratory classes upto post-graduate level.

- (ii) **Chemistry—(Three posts)**

Qualifications : Essential

- (i) A good academic record with a Master's degree in Chemistry
- (ii) Research experience for at least two years.

Desirable

- (i) A doctorate degree in Chemistry.
- (ii) Familiarity with modern techniques in instrumental analysis.

Duty : To assist in the departmental research work and to conduct laboratory classes upto Post-graduate level.

Applications form may be had from the Registrar on request along with an

unstamped self-addressed envelope of size 23 cm x 10 cm. Applications accompanied with an application fee (non-refundable) of Rs. 7.50 (Rs. 1.87 for SC/ST candidates) for category No. I to X and Rs. 3.00 (Rs. 0.75 for SC/ST candidates) for category No. XI and XII payable by means of crossed Indian Postal Order to the Indian Institute of Technology, Kharagpur at Kharagpur-2 Post Office should reach the Registrar, IIT, Kharagpur by the 17th March, 1979.

A. K. Sur
REGISTRAR

OSMANIA UNIVERSITY
HYDERABAD-500007, (A.P.)
Advertisement No. 5/1979

Applications, in the prescribed form, together with the registration fee of Rs. 5/-, are invited for the following posts in the University Service, so as to reach the undersigned on or before 12.3.1979:

1. Professor of History
Rs. 1500-60-1800-100-2000-125/2-2500
2. Lecturers in Mechanical Engineering/Genetics/Sociology.
Rs. 700-40-1100-50-1600

Age

Professor: Not more than (50) years
Lecturers: Not more than (35) years

Note

1. Age limit does not apply to the employees of this University.
2. Relaxation in age to the extent of five years may be granted to candidates belonging to SCs., STs., and B.Cs., respectively in case of Lecturers only.
3. Age relaxation can be considered in deserving cases.

14%, 4% and 25% reservations are made for Scheduled Castes, Scheduled Tribes and Backward classes respectively in case of Lecturers only.

Applications forms can be had from the Director, Department of Publications and University Press, Osmania University, Hyderabad-500007, A.P. on payment of Rs. 4-50 in person or by money order or by a postal order UNCROSSED made payable to the Director and by sending a self addressed envelope (11½ x 26½ cms). duly stamped for ordinary or registered post.

A latest passport size photograph should be affixed on the application form.

Full particulars can be obtained on requisition from the Director, Osmania University Press, free of cost, by sending a self-addressed stamped envelope.

B. Ramachandra Reddy
REGISTRAR

JAWAHARLAL NEHRU
UNIVERSITY

NEW DELHI-110067

Advertisement No. Aca. III/1/79

The School of Computer & Systems Sciences and the School of Life Sciences

of University have openings for faculty positions in the following areas:

I. SCHOOL OF COMPUTER & SYSTEMS SCIENCES

1. Professors/Senior Fellows—two
 - (i) Decision and Optimization Theory
 - (ii) Computer Systems (Soft Ware)
Knowledge of computer based simulation/modelling information system would be relevant.
2. Assistant Professor—one with specialisation in Computer Applications to Numerical Methods, Numerical Software and Applications.

II. SCHOOL OF LIFE SCIENCES

3. Professor/Senior Fellow—one in Plant Physiology

Essential Qualifications

For Posts No. 1&3

- (a) Consistently good academic record with at least a high second class Master's Degree in the appropriate discipline or an equivalent qualification from an Indian/Foreign University.
- (b) A Doctor's degree or published work of an equally high standard.
- (c) About ten years experience of teaching and/or research, in interdisciplinary area.

For Post No. 2

- (a) Consistently good academic record with at least a high second class Master's Degree in the appropriate discipline or an equivalent qualification from an Indian/Foreign University.
- (b) A Doctor's degree or published work of an equally high standard.

Provided that if the Selection Committee is of the view that the research work of a candidate as evident either from his thesis or his published work is of a very high standard it may relax any of the qualifications prescribed in (a) above.

Provided further that if a candidate possessing a Doctor's degree or equivalent research work is not available or is not considered suitable, a person possessing a consistently good academic record (weightage being given to M.Phil or equivalent degree or research work of quality) may be appointed provided he has done research work for at least two years or has practical experience in a research laboratory/organisation on the condition that he will have to obtain a Doctor's degree or give evidence of research work of equivalent high standard within five years of his appointment, failing which he will not be able to earn future increments until he fulfils these requirements.

Desirable

For Posts No. 1&3

Capacity to guide research

For Post No. 2

Some teaching experience; post doctoral research experience

Scale of Pay

Professor/Senior Fellow

Rs. 1500-60-1800-100-2000-125/2-2500

Assistant Professor

Rs. 700-40-1100-50-1600

Relaxation in any of the qualifications may be made (a) in favour of persons of eminence or of high academic professional distinction, and (b) in exceptional cases where adequately qualified persons are not available but are otherwise found suitable for the respective positions. It will also be open to the University to consider the names of suitable candidates who may not have applied.

The selected candidates will be expected to participate in the teaching and research programmes in the concerned disciplines in other Schools of the University as well as in the programmes offered in their own Schools.

Normally appointment of Senior Fellows is made on contract basis for a period ranging from one to three years.

Benefits of C.P. Fund-cum-Gratuity/G.P. Fund-cum-Pension-cum-Gratuity are available as per University rules.

Persons already in employment should route their applications through proper channel.

Due consideration will be given to candidates belonging to SC/ST at the level of Assistant Professor.

Second class (mail) rail fare (both ways) will be paid to candidates invited to appear for interview from outstation by the shortest route subject to the production of rail receipt.

Applications, separate for each post, on the prescribed form, obtainable free of cost from the University by sending a self-addressed and stamped envelope of 23cm x 10cm size to the Deputy Registrar (Academic), Jawaharlal Nehru University, New Mehrauli Road, New Delhi-110067 should reach him latest by 17 March, 1979 (superscribing on the envelope the post for which form asked for).

Candidates from abroad, applying for faculty positions, may apply on plain paper, (but their applications should reach the University by the last date) furnishing all the relevant information such as their names; date and place of birth marital status; nationality; state of domicile; postal and permanent addresses; father's name and address; academic and professional attainments; full details of (a) publications, and (b) research projects undertaken; language(s) known; details of visits to foreign countries; and the names and addresses of at least two persons well acquainted with the candidates professional work who should also be requested by the candidate to forward to the DEPUTY REGISTRAR (ACADEMIC) Confidential Report concerning the candidate.

ALIGARH MUSLIM UNIVERSITY ALIGARH

Advertisement No. 33/78-79.

Applications, on the prescribed form, are invited for the following posts:

"Candidates must possess a Medical qualification included in the first or second schedule or Part II of the third schedule (other than licentiate qualifications) of the Indian Medical Council Act, 1956. Holders of educational qualifications included in Part II of the third schedule should fulfil the conditions stipulated in Section 13(3) of the Indian Medical Council Act, 1956. Must possess a basic University or equivalent qualification entered in schedules under State/Central Registration Act." (For S. Nos. 1 & 2 only).

1. Lecturers in General Surgery.

Scale : Rs. 700-40-1100-50-1600 plus allowances.

Qualifications

M.S. (Surgery)/M.S. (Gen. Surgery)/F.R.C.S. Speciality Board of Surgery (U.S.A.). The requisite recognised post-graduate qualification in the subject and three years' teaching experience as Tutor/Registrar/Resident in Gen. Surgery of which one year should be after post-graduate qualification.

Desirable

Experience as Lecturer. Aptitude for research. Published papers.

2. Lecturer in Paediatrics (Temporary)

Scale : Rs. 700-40-1100-50-1600 plus allowances.

Qualifications

M.D. (Paed.). Speciality Board of Paediatrics (USA). The requisite recognised post-graduate qualification in the subject and three years' teaching experience as Tutor/Registrar/Resident in Paediatrics of which one year should be after post-graduate qualification.

3. Professor of Mathematics.

Scale : Rs. 1500-60-1800-100-2000-125/2-2500 plus allowances

Qualifications: Ordinarily required

A first or high second class Master's degree in Mathematics of an Indian University or equivalent foreign qualification. A research degree of a doctorate standard or published work of a high standard; and at least ten years' experience of teaching post-graduate classes and guiding research.

4. Reader in Sociology (Plan post)

Scale : Rs. 1200-50-1300-60-1900 plus allowances.

Qualifications : Ordinarily required

A first or high second class Master's degree in the subject concerned of an Indian University or an equivalent foreign qualification. A research degree of a doctorate standard or published work of a high standard; and at least five years' experience of teaching post-graduate classes and some experience of guiding research.

5. Lecturer in Linguistics

Scale : Rs. 700-40-1100-50-1600 plus allowances.

Qualifications

A doctor's degree or research work of an equally high standard; and consistently good academic record with 1st or high second class (B in the seven

point scale). Master's degree in a relevant subject or an equivalent degree of a foreign University. Having regard to the need for developing interdisciplinary programmes, the degrees in (a) & (b) above may be in the relevant subject.

Desirable

Teaching experience of degree/post-graduate classes.

6. Lecturer in Arabic (Temporary but likely to become permanent).

Scale : Rs. 700-40-1100-50-1600 plus allowances.

Qualifications

a) A doctor's degree or research work of an equally high standard and (b) consistently good academic record with first or high second class (B in the seven point scale). Master's degree in a relevant subject or an equivalent degree of a foreign University. Having regard to the need for developing interdisciplinary programmes, the degrees in (a) & (b) above may be in relevant subjects.

Prescribed application form & instructions may be had from the Dy. Registrar (Lx.) either personally or by sending a self-addressed envelope of 23x10 cm., Last date for receipt of applications is 12th March, 1979. Incomplete applications and those received late may not be considered.

Higher initial start may be given to candidates possessing exceptional qualifications and experience. Candidates interviewed may be paid contribution towards their T.A. equal to one single second class railway fare only.

Jamalur Rahman
REGISTRAR

HIMACHAL PRADESH UNIVERSITY SIMLA-5

RECRUITMENT BRANCH

Advertisement No. 4/79

APPLICATIONS on plain paper under registered cover, alongwith a Crossed Indian Postal Order of Rs. 10/- (Rs. 5/- for S.C./S.T.) payable to the Finance Officer, H.P. University, Simla-5 are invited for the following posts so as to reach the undersigned on or before 12th March, 1979.

1. Director College Development Council: on a salary between Rs. 2000-2500 per month (fixed).

Essential Qualifications

- At least Second Class Master's degree.
- A minimum of 10 years' experience in an educational institution of which at least 5 years of administrative experience in a responsible position such as Principal of a Degree College/Head of the Department in a University/Deputy Director of Education.

Desirable

(i) Sufficient experience of utilizing development and other University grants available to the College for under-graduate as well as postgraduate studies during the IV and V five year plans. (ii) Rich experience of guiding, supervising and controlling extra-curricular activities such as N.S.S., N.C.C.

Sports, Cultural and other Youth Welfare Activities etc. (iii) Intimate knowledge of managerial, financial and administrative problems of colleges and of relationship between affiliated colleges and an affiliated University.

Preference: Ph.D. degree of a University.

2. Co-ordinator: In the pay scale of Rs. 1100-1600 plus usual allowances as admissible under the University Rules.

Essential Qualifications

Ph.D. or M.Phil Degree in any subject with experience of working in Adult Education Programme.

Desirable

Experience in N.S.S., N.C.C., Sports, Cultural and other Youth Welfare Activities.

Preference: Preference will be given to the candidates who have adequate administrative experience also.

Note

The Co-ordinator will be required to look after the work pertaining to Co-ordinator N.S.S. also.

3. Project Officers: (3) in the payscale of Rs. 700-1300 plus usual allowances as admissible under the University Rules.

Essential Qualifications

M.A. in any subject with 5 years' experience in the field of Social Education/Employment Bureau.

Desirable

Acquaintance with problems of tribal area and experience of working in Adult Education Programmes.

Note: One post reserved for female candidate.

Candidates already in service should send their application through proper channel. An advance copy, however, may be sent direct.

Candidates called for interview will have to come to the place of the interview at their own expenses and bring with them their original research papers, degrees and certificates etc. for verification.

The University reserves the right to negotiate with suitable person or persons, if necessary, who may not have applied.

The University also reserves the right to fill up or not to fill up the posts or to call only selected candidates for interview. The number of posts likely to be filled may vary.

The candidates are required to give the following details:

Name of the applicant, date of birth, address for correspondence, academic qualifications; giving percentage of marks in each examination from high school onwards, teaching/research experience with details of post held, published research work, administrative experience or other experience, minimum salary acceptable and time required for joining the posts in case of selection, telegraphic address, if any, and any thing also worth mentioning which is not covered above.

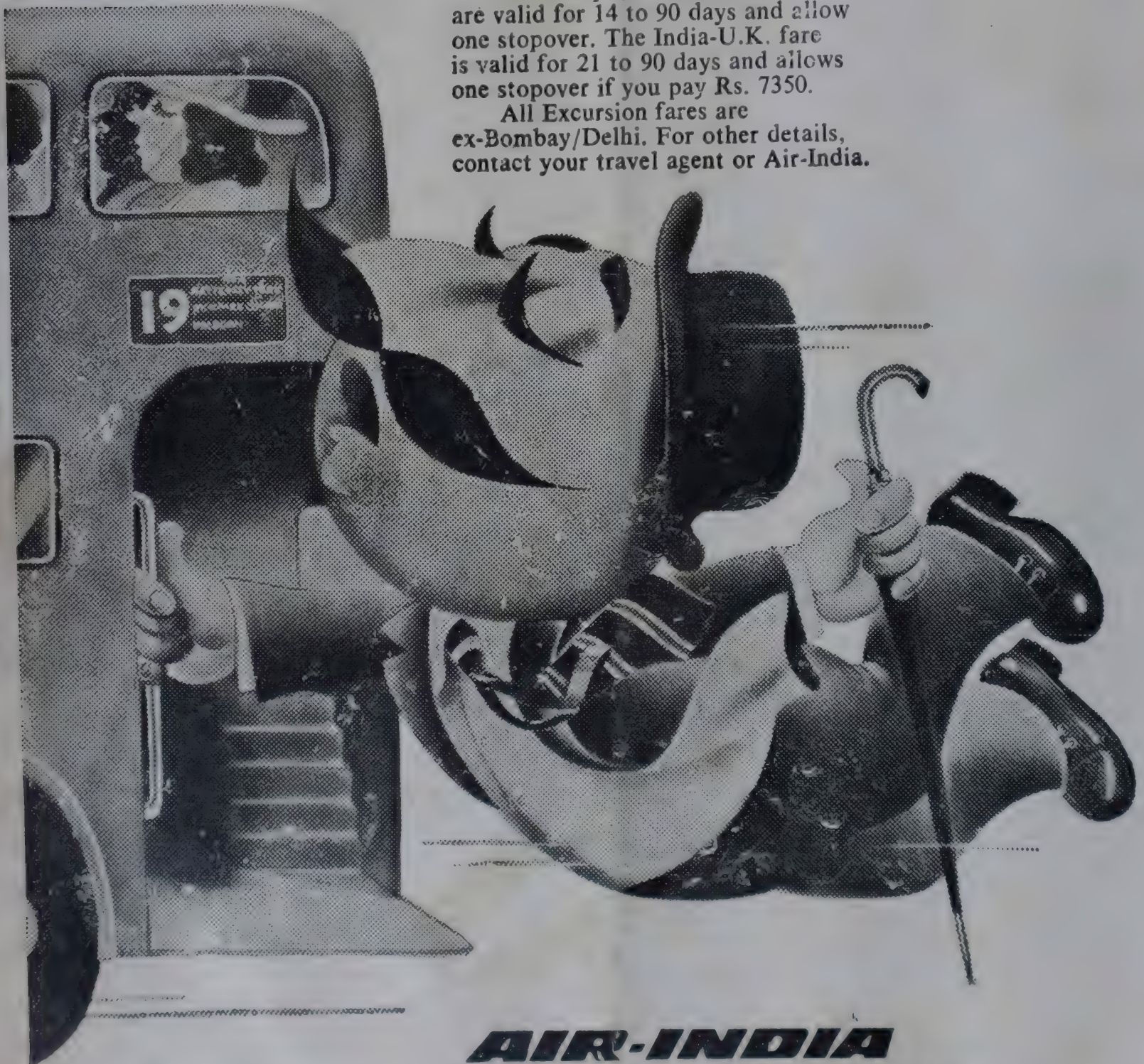
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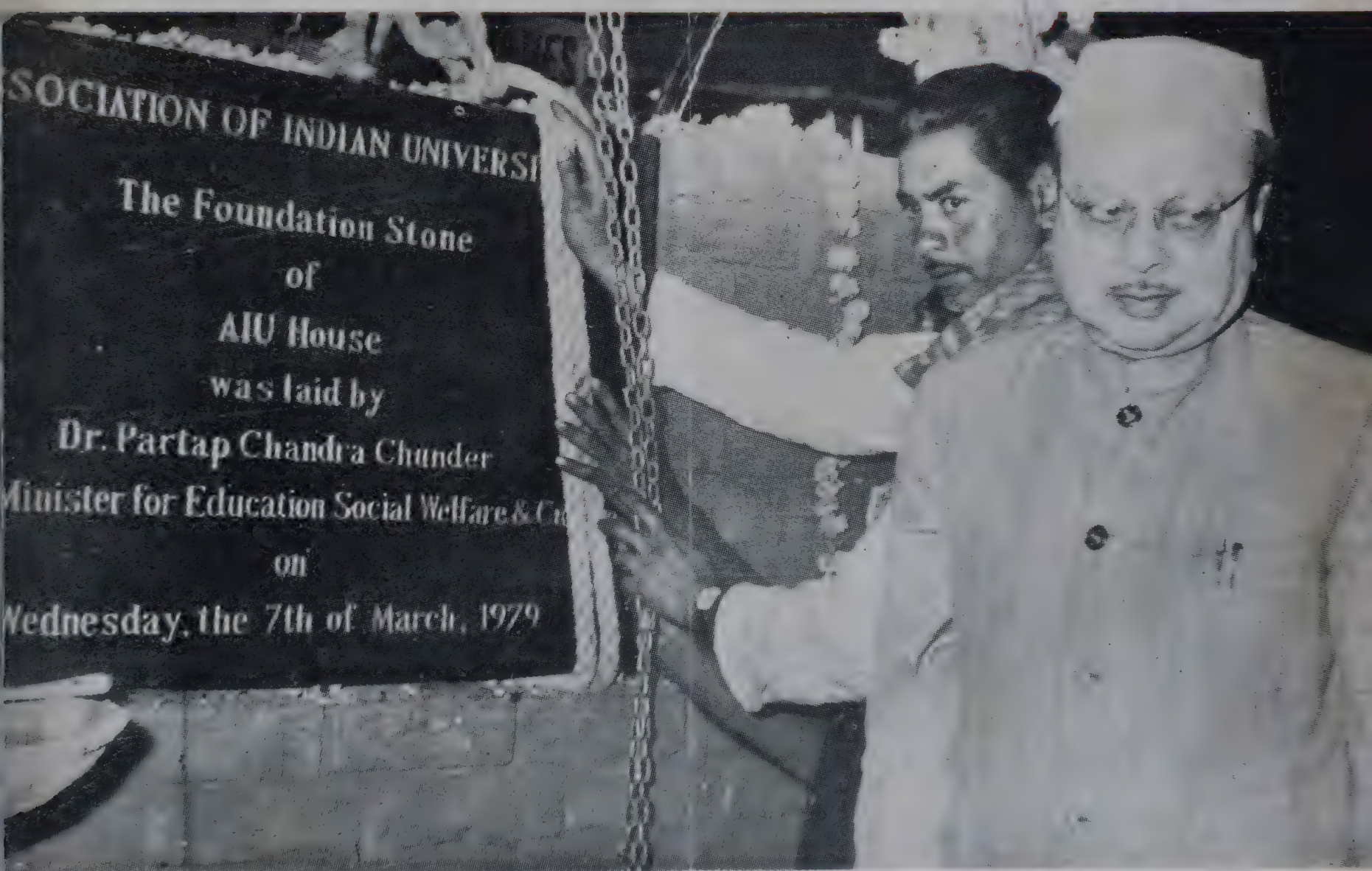
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University News

A FORTNIGHTLY CHRONICLE OF HIGHER EDUCATION & RESEARCH MARCH 15, 1979



Dr. Partap Chandra Chunder, Union Minister for Education & Social Welfare, at the Foundation Stone Laying Ceremony of AIU House in New Delhi.

SAURASHTRA UNIVERSITY RAJKOT-360005

Applications in the prescribed forms are invited for the undermentioned posts in the various Departments of this University. Application forms alongwith detailed requirements of qualifications and experience for these posts will be available from the Registrar, Saurashtra University, University Campus, Kalawad Road, Rajkot-360005 on sending a self-addressed envelope of the size 23×11 cms. with postage stamps worth Rs. 1-15.

Applications (seven copies) accompanied by Indian Postal Order for Rs. 5/- crossed in favour of the Registrar, Saurashtra University, Rajkot should reach this office on or before 22-3-1979.

(1) Professor of Gujarati; (2) Professor of Economics with specialization in Business Management, Financial Management, Marketing Management or Personnel Management and/or allied subjects; (3) Professor of Commerce with specialization in Accountancy, Business Management, Personnel Management, Marketing Management or any other specialization field in Commerce and Management; (4) Reader in Economics with specialization in Business Management, Financial Management, Marketing or Personnel Management and/or allied subjects; (5) Reader in Economics preferably in Quantitative Economics, Development Economics, Agricultural Economics, Management Economics and Rural Economics; (6) Reader in Law; (7) Lecturer in Gujarati preferably in Literary Criticism/Linguistics; (8) Lecturer in Economics preferably in Quantitative Economics, Development Economics, Agricultural Economics, Management Economics and Rural Economics; (9) Lecturer in Law; (10) Lecturers in Chemistry preferably having experience for teaching Analytical, Physical or Organic Chemistry.

Pay Scales

1. Professor

Rs. 1500-60-1800-100-2000- 125/2-2500.

Reader

Rs. 1200 - 50- 1300- 60- 1600-assessment-60-1900.

Lecturer

Rs. 700-40-1100-50-1300-assessment-50-1600.

Reservation for Scheduled Castes, Scheduled Tribes, Nomadic Tribes/Denotified Tribes and Social and Educational Backward Classes will be 5%. Age ordinarily not exceeding 55 years. The posts are permanent and carry benefit of Contributory Provident Fund as per University rules. Dearness Allowance and House Rent Allowance will be paid as per University rules. Higher initial salary in the scale may be considered in case of exception-

nally qualified and experienced persons. Qualifications and experience may be relaxed in special cases. Candidates in employment must submit their applications through their present employer. Those knowing Gujarati and/or Hindi will be preferred.

V.M. DESAI
REGISTRAR

INDIAN INSTITUTE OF TECHNOLOGY, BOMBAY P.O. I.I.T. POWAI, BOMBAY-400076

Advertisement No. 960/79

Applications are invited for the faculty positions of Assistant Professor and Lecturer in the following areas in the departments of the Institute. Applicants should give an account of their academic and professional record and a list of research publications. A candidate may be considered for a lower position if not recommended by the Selection Committee for the post applied for.

A few posts of Lecturer are reserved for candidates belonging to Scheduled Caste/Scheduled Tribe Community.

1. Assistant Professor

Scale of Pay

Rs. 1200-50-1300-60-1900.

2. Lecturer

Scale of Pay

Rs. 700-40-1100-50-1600.

Qualifications & Experience & Fields of Specialisation

1. Assistant Professor & Lecturer: Mechanical Engineering Department

Qualifications

Applicant should have consistently excellent academic record with Doctorate/Master's degree in appropriate field from a recognised University/Institute. Carrying out independent research and guiding research desirable.

Experience

Minimum 5 years' experience in teaching/research/industry for the post of Assistant Professor.

Minimum 2 years' experience in teaching/research/industry for the post of Lecturer.

Fields of specialisation

For the post of Assistant Professor/Lecturer

(i) Vibrations, Dynamics of Machines, (ii) Machine Tools (iii) Welding (iv) Fluidics and Fluid Power Engineering, (v) Energy Conversion (New Energy Sources).

For the post of Assistant Professor only

(i) Operations Research.

For the post of Lecturer only

(i) Mechanisms, and (ii) Cryogenic Engineering.

2. Lecturer: Department of Metallurgical Engineering

Qualifications & Experience

Applicant should have consistently excellent academic record with at least

Master's degree in the appropriate field from a recognised University/Institute with not less than two years' research or industrial experience. Candidates with industrial experience will be given preference. Doctorate degree desirable.

Fields of specialisation

(i) Materials Technology (ii) Ferrous Process Metallurgy, (iii) Extract Metallurgy and Process Engineering and (iv) Corrosion Engineering.

3. Assistant Professor & Lecturer: Industrial Design Centre

(i) Assistant Professor

Qualifications & Experience

A good degree in Engineering/Architecture/Applied Art and Post-graduate education in Product Design/Industrial Design. Relaxable in the case of candidates with considerable experience and proven ability. At least five years' teaching or professional experience in Product Design/Industrial Design.

(ii) Lecturer

Qualifications, Experience & Fields of specialisation

Degree in Mechanical Engineering or Design field with 3 years' experience of research work in Ergonomics.

OR

Post-graduate qualification in Ergonomics or Human Factor engineering with similar experience. The job involves the development of Applied Ergonomics Lab. and teaching Ergonomics to the postgraduate students of Design.

4. Assistant Professor: Interdisciplinary Group (Materials Science)

Qualifications & Experience

Good Master's degree in Materials Science with a Bachelor's degree in Engineering or M.Sc. in Chemistry/Physics. Ph.D. in Materials Science desirable. Candidates with experience in Electronics Materials will be given preference.

Minimum 5 year's experience in teaching/research/industry.

The posts are permanent and carry allowances such as D.A., C.C.A., H.R.A. as per rules of the Institute which at present correspond to those admissible to the Central Government employees stationed at Bombay. Applications should be made on the prescribed form obtainable free of charge from the Registrar of the Institute by sending a self-addressed envelope of 25 cm×10 cm size. Indian candidates abroad may apply on plain paper in duplicate. Candidates employed in Government/Semi-Government Organisations or Educational Institutions should apply through proper channel. Completed applications should reach the Registrar, I.I.T., Powai, Bombay-400076 by 30-3-1979.

UNIVERSITY NEWS

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Opinions expressed in the articles and reviews are individual and do not necessarily reflect the policies of the Association

Hony. Editor : ANJNI KUMAR

Universities and National Development Linkage with Environment: Educational Innovation at Bombay University

Ram Joshi*

The role of Universities in relation to problems of national development has been a subject of discussion among educational planners in this country for atleast a decade now. The question came to the fore in the light of the report of the Education Commission (1964-66) which stressed the role of education as an instrument of development and change and recommended a new pattern of education with that role in view. The phased introduction of the 10+2+3 pattern meant that the Universities had to be ready with their new three year degree courses before the commencement of the academic year 1977-78. This, in turn, required them to undertake an examination of the traditional role of the University and the educational philosophy underlying its current courses with a view to determine their usefulness in the light of the changing goals and priorities of education.

The opportunity was utilised by the University of Bombay to move decisively in the direction of socially relevant course offerings, first at undergraduate and later at postgraduate levels. The object underlying the new courses is to sensitize the minds of the young to social reality around them through a series of social awareness courses and to equip them not only with theoretical skills and tools for a proper analysis and understanding of social problems, but also with values and attitudes which would enable them to participate in the national endeavour to solve those problems and thus make their full and willing contribution to national development. After all, education is not mere acquisition of theoretical knowledge; it also involves the training of the mind and an inculcation of certain values and attitudes for the building up of a better society. Universities have to provide an intellectual leadership to the society and not remain content with mere teaching and academic research. The new course structure has been designed with that object in view and seeks to bridge the gap between academic pursuits and social concerns by bringing the concept of social relevance into teaching and research programmes and by adding the important dimension of applied or practical training to the teaching of theory. The University has decided that it can no longer remain in ivory tower isolation but must adopt new ways of teaching and learning through participation in community action, making such action itself the vehicle of learning. The new courses including those like Foundation Courses and Rural Development courses need to be viewed from this point of view.

Genesis of the New Courses

The University has introduced a five-paper course on Rural Development which can be offered by any undergraduate student in the faculties of Arts, Science or Commerce as an elective course in lieu of one of the conventional discipline-oriented courses. The course constitutes about one-fourth of the total course load in the Science faculty and about a third in the faculties of Arts and Commerce. In 1977-78 which was the first year of its introduction, only four of the colleges in Arts, Science and Commerce faculties offered the course and the number of students was 108. This year, only the second, the number of colleges offering the course has doubled and student enrolment nearly trebled. It now stands at 290 (including 100 in the second year). Out of the 190 new students enrolled this year, as many as 140 come from mofussil colleges and this is as it should be. The early popularity of the course and the extent of response for it both from colleges and students augers well for the future of this educational innovation undertaken by the Uni-

* Vice-Chancellor, Bombay University.

versity. Its significance is three-fold. It represents, first, a pioneering decision by a traditionally conservative university to break with its tradition and launch into a critically important problem area of our national development; second, it is pre-eminently an inter-disciplinary course bringing different disciplines to bear on it. It covers not only Social Sciences like Economics, Sociology and Political Science but also such natural Sciences as Chemistry and Botany and commercial subjects like Marketing Farm Management and Finance. Finally, its importance lies in the fact that the course includes a substantial component of field work. The course is designed as an exercise in 'experiential learning' in the true sense of that term with each of the five papers providing 30 percent of the grade for practical work on the farm. The university has set up an 'extension campus' for this purpose in a predominantly tribal area about seventy miles from Bombay. This provides to students an excellent opportunity to blend theory with rural life experience and practical field work in an ideal setting. It also gives them first hand knowledge of the different governmental and non-governmental development agencies operating in the village to bring about integrated development and to examine their efficacy on the one hand and villagers' responses to such agencies on the other. This rapidly rising institutional infrastructure has opened up new possibilities for growth and in conjunction with the emerging grass-root leadership, is slowly but surely changing the face of rural society. To expose young minds to this change through planned programme of stay and work along with this infrastructure is itself the beginning of that new education which will link the skills and values of the younger generation to specific tasks of national development.

Content of Rural Development Course

As stated earlier, there are in all five papers with three options to Paper V. Every paper carries a theory portion of 70 marks and field work of 30 marks. In Arts and Commerce faculties paper is to be studied in each of the first two years and three papers in the third and final year. In the Science faculty, on the other hand, the first two papers are to be studied in the first year and the remaining three papers in the second year. This leaves the student free to concentrate on his discipline-oriented subjects of specialization in the final year. The five papers are as follows.

Paper I: Organisation of Rural Life : This is a paper on an acquaintance level. The idea is to acquaint the student with what rural life is like. It covers such topics as village social structure, economic system, rural administration and agent of social change.

Paper II : Production Economics and Farm Management : This paper introduces the students to factors of production, particularly agricultural production such as allocation of resources, nature of cropping patterns, technology involved, quantum of yield, Farm Management including utilization of local resources, landholdings, soil testing, use of fertilizers

and manures, use of gobar or bio-gas plants, maintenance of farm accounts, budgeting and cost-benefit evaluations.

Paper III : Rural Problems and Strategies of Rural Development : This paper is designed to enable students to identify rural problems and to study them at a deeper level and in detail and then to work out strategies to solve them. It covers topics like Project performance, Planning and rural development, price trends, land tenures and other problems, population growth and behaviour, labour force concept, ideological content of alternative strategies of rural development and problems arising from mechanization and modernization.

Paper IV : Marketing and Finance : Here the student is executed to study the problems of marketing village products and how markets affect price level. The student will also have to study various financial agencies from local money lender to co-operative banks, land mortgage banks and nationalised banks.

Paper V: Production Techniques and Organisation : In this paper students study general features of enterprises other than agriculture such as cattle breeding, dairy, fishery, forestry, horticulture as well as important cottage and village industries and small-scale industries located in the rural areas.

There are three options to paper V namely, (a) Home, Health, Hygiene and Nutrition, (b) Chemistry and Biology in Rural Setting; and (c) Food Science. The first option may interest girls in particular while the other two options may be specially useful and interesting to Science students.

Practicals

Every paper has, as stated above, a theory content carrying 70 marks and practicals of 30 marks. For the latter a student is expected to spend about four weeks in a rural setting, preferably at a stretch.

The field work for Paper I is more at an identification and observation level while for Paper II there will be involvement in actual field operations and case studies. In paper III more stress will be given on preparing rural economic profiles and development plans. The student will be asked to participate in the working of co-operative societies, banks and credit extension programmes etc. Paper III again will require a student to acquaint himself through participant observation with the particular problems of the village and the relative merits and demerits of alternative approaches to development that are being tried there. For papers IV and V students will submit a project report on any field topic in lieu of practicals.

Utility of the Rural Development Course : The question of the utility of this innovative course has to be viewed from two angles; from the point of view of individual student and from the point of society.

The course being primarily an educational scheme the emphasis is naturally on the student. It is expected that after the completion of the course, the

student should be fully acquainted with the problems of rural India, that he should be sufficiently motivated to handle any of those problems when he would be asked to do so if he is in employment of any of the development agencies, that he should be able to select and be considered qualified for any employment that concerns rural development such as rural banking, block development officer, animal husbandry or in institutions in urban areas concerned with rural development. In the alternative the student should be able to display qualities of entrepreneurship in starting an occupation or vocation on his own with resources from rural surroundings.

From the social point of view the entire course and particularly the field work is so planned that investment in education should not be barren and parasitical as it is at present but must result, simultaneously as well as ultimately in an investment in development. The field work is being so organised that on the one hand the student would gain a valuable experience, and on the other hand, it would result in concrete social benefits. With a sound theoretical base and rich experience in the field at the grass-roots level, the Rural Development Course, it is fervently hoped by the University, will help in generating a framework of planning at the implementation level and also in generating social idealism and enthusiasm among the University youth for national development.

The second significant innovation recently undertaken in terms of forging linkage with environment is the introduction of what have come to be called the "Foundation Courses" in the three faculties of Arts, Science and Commerce. They comprise two compulsory papers, one at each of the first two of the three year degree course. The first paper is entitled "Elements of Social and Economic Life in India" and the second, "Science, Technology and their impact on Society".

The major purpose of the Foundation Courses is to heighten the social awareness of the college beginners by equipping them with a wider intellectual culture before he adopts any one of the Specialised Streams. Thus, hopefully, future scientists, technicians and medical men will not remain ignorant of social realities and future social scientists will have at least a nodding acquaintance with the great developments in sciences which have shaped the modern world. Essentially it is an experiment in 'General Education' and although no one can or wishes to reverse the process of specialisation so necessary in the modern world, at least a small corrective to meet the emerging crisis of the two cultures is considered essential by educationists. One of the glaring defects of our educational system is its lopsidedness. Narrow and early specialisation result in robbing the student of the essential opportunity for a more rounded education required to fulfil the complex obligations of citizenship in the modern society. Everyone has to be a citizen—and an enlightened one at that—before he becomes a specialist in any branch of knowledge. It is therefore necessary that every undergraduate, irrespective of the

faculty to which he belongs, must have a fair acquaintance with the conditions and problems of his own country. He must be made aware that he himself is a product of the forces which have shaped the society at large. He can, this way, become conscious of his roots as well as of the social environment which has gone into the making of his personality.

The modern society is a technological society. Science and technology are being increasingly harnessed for social purpose and this has created problems of a very complex nature including moral questions. Greater and greater use of science and technology is no more found to be an unmixed good since it has posed some basic problems concerning relationship between man and nature and between man and man. Both the scale and quality of our lives have changed radically in the past century or two and questions which go to the very root of the meaning of life and future of human civilisation are raised. It is imperative that undergraduates are exposed to some of these problems so that they are better prepared to face them when confronted in after-college life. The second paper deals with a broad sweep of scientific and technological progress made by modern man and against this backdrop it discusses the economic, technological, political, religious and moral problems created by science and technology. After the initial difficulties which included faculty and student resistance, the Foundation Courses seem to have settled down as an integral part of the new undergraduate education in the University.

Education to be viable and credible has to have an interface with Society. The recent innovations like Rural Development or Foundation Courses introduced by the Bombay University are in the nature of establishing just such an interface through cognitive and institutional links with environment to give education its social relevance and its élan vital. □

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5 years	72.00	350.00	550.00
Single copy	00.80 ps.	4.00	8.00

The Journal is mailed on 1st & 15th of every month.

Universities and National Development

—Linkage with Environment

L. R. Shah*

Higher Education is assuming an increasingly important role in the educational system and in the life of nations, as it is expected to respond to the new demands arising from the rapid transformation of societies and to the aspirations of individuals for economic, cultural and intellectual improvement. In addition to the traditional functions of higher education, teaching, training and research, as a means for the transmission and advancement of knowledge and for the provision of qualified manpower, new emphasis is laid now on the obligation to adapt the higher education system to the society in which it operates, and to the many needs of that society. These are convergent and complementary objectives.

The conception of development underlying this action is that of integrated development, which would imply not only economic growth but overall social and cultural development, based on economic and technological progress, with its main focus on individual self-fulfilment. Development calls in fact for full use of all the community's human resources and their active participation in the Community's life and advancement. The democratization of higher education is, therefore, a main prerequisite for the fulfilments of its development function. While it cannot be reduced to a matter of mere quantitative expansion, any increase in the numbers of those enrolled in higher education cannot be limited to a growth in the number of students who constituted its traditional clienteles. It is essential that access to its institutions be extended to the various age groups and to various social categories which were hitherto excluded from it.

Established chiefly in urban areas, and aimed at training an elite, institutions of higher education have helped to maintain and emphasize, in the majority of countries, a cleavage between urban and rural populations on the one hand, and between intellectual and manual workers on the other. These gaps have by no means totally disappeared, even in the most industrialized countries, not to mention the countries which imported models from old colonial powers. The way to integrated rural development would be much easier if higher education was made accessible to and relevant for rural populations. This is a particularly striking illustration of two demands which must be met by higher education and which must determine its development: (i) democratization, and (ii) integration in the community in which it must contribute to development. Also, if our universities are to enjoy the advantages of their urban position, if they are to be to Indian society what the

great urban universities of Europe have been to their societies, they must assume responsibility for the development of urban areas. What they need is awareness of their opportunities and potentialities; what they need is a philosophy.

In the Soviet Union, the "people's universities" provide Soviet citizens with a State-run means of self-education. They offer special facilities for meeting the educational requirements of the population by making courses available to workers, members of collective farms and skilled workers in various sectors of the national economy and culture. In the larger factories and plants, part-time higher education is provided for workers, in the form of sandwich courses. These establishments of higher technical education will eventually become one of the major forms of "open" post-secondary education and training and to foster to a considerable extent the integration of productive work in every-day life and lifelong learning. In the United States, one example of "non-traditional" students is that of the Community Colleges. The community colleges are based on the principle of freedom of access to all, and the curriculum is designed for all those whose place of residence, lack of previous formal education or lack of adequate resources has prevented them from pursuing their studies. The experience gained in recent years shows that the community colleges offer new opportunities for vocational advancement.

The provision of access to higher education for adults and young people who may not have had a normal academic career—workers and by members of rural populations—who constitute the vast majority of the population of our country should receive high priority in our higher education system if it is to ensure the full use of human resources in the context of lifelong education. In addition to its function of imparting knowledge to which all individuals are entitled, the educational system as a whole, specially institutions of higher education, must henceforth endeavour to enable each individual to supplement and overhaul his knowledge in the light of the progress of science and technology and of the requirements of society. It is no longer enough to seek to remedy the lack of initial training. It must now be accepted as a *sine qua non* for the effective functioning of higher education—as indeed of all education—that such initial training must be constantly supplemented, broadened and updated. It also goes without saying that higher education must, if it is to ensure both the effective democratization of education and society and the full participation of individuals in progress, do more to develop the critical faculties and prepare the individual to take an active part in

*Programme Adviser, Ministry of Education & S.W.

community development, thus enabling personal fulfilment along with the community's advancement. The traditional task of providing training for the various liberal professions and for various specialized activities at the higher levels must be reviewed and transformed into one of training professional development personnel without neglecting integrated development of the community.

It is also clear that in addition to research work university institutions must undertake studies, surveys and consultations and provide expert advice for those responsible for taking decisions and the different groups involved in development work, that is, ultimately, all socio-occupational groups in the community. The University can also provide a common meeting ground for the divergent elements of the community and assist in reaching an objective understanding of its problems while at the same time providing the basis for the development of theory and policy for general application elsewhere. No community issue, whether it results from social strain, language tension, religious conflict, nationality origin, or labour-management disagreement, should be beyond the interest of the university scholar.

The balance to be struck between new and traditional function is indeed one of the problems to be studied if higher education institutions are to be able to fulfil their responsibilities towards society while remaining true to their own mission. In other words, it needs to be considered how higher education institutions are to reconcile their traditional role with their mission of serving the community. The community pays heavily for maintaining the institutions of higher education and, therefore, it is entitled to benefit from their achievements with their traditional activities relating the life of mind.

A further aspect of the restructuring of higher education institutions is bound up with the need to open their doors more widely to a non-traditional clientele of adults, and particularly of workers, who have been denied the opportunity to follow a normal school and university career. In addition to higher courses of the current academic type intended for young students who have completed their secondary education, courses should be made available for adults during periods possibly coinciding with productive work, or "sandwich" courses. Appropriate arrangements might be made within the framework of conventional institutions, or measures might be taken here again to set up new types of institutions. These new curricula and new arrangements, so essential for the full utilisation of human resources, call for new admission procedures based on practical experience and previous attainments of various kinds as much as on traditional academic standards, as also for new teaching methods, particularly a more extensive use of the various methods learning by radio, television and correspondence, as well as through institutions of the type exemplified by the Open University.

In addition to the measures to be taken in order to create new types of institutions and to achieve a better distribution of existing higher education institutions and a restructuring of their curricula, various

changes of emphasis in respect of the content of education would seem to be necessary.

The necessities of community development cannot fail to have considerable repercussions on content of education. In particular, it will be necessary to undertake a number of studies on local history, cultures and languages and to train the various categories of development personnel; but it is equally necessary to rethink, as has already been done in some countries, the teaching of medicine in terms of both the traditions and needs of the community, and to adapt certain courses in technology for purposes of developing appropriate technology. It is of foremost importance that higher education institutions, like the other components of the educational system, should closely link their activities to the world of work. The aim should be to provide students with knowledge that can be applied and used right-way. An effective contribution will be made to development of higher education institutions devote a large proportion of their efforts to applied research and to consultations undertaken at the request of the public authorities, local communities or different categories of the population. Such applied research and consultations should be related to the problems relating to rural or industrial development. Another means of linking teaching and research work to the world of work would be to make a regular practice of securing the assistance of different categories of gainfully employed persons from the different sectors of rural and urban communities and of officials responsible for social and administrative services.

A modern university should provide for a multi-level training system which will be able to meet the country's needs more effectively and to enable a greater number of people to continue to use and develop their skills at different periods of their lives. In a few years' time, such a system might lead to a type of post-secondary education in which full time training periods alternate with periods of participation in working, productive life, thereby achieving the ideal of a learning society. "Soil health care" programme undertaken in the National Service Programme in 1979 on an experimental basis is an instance of how a linkage can be established between what the students of Chemistry learn in the classroom of a college and how their knowledge and training in chemistry can become relevant to the needs of the community and help in solving the problems of the farmers.

Another manner in which full use can be made of the resources higher education institutions by the community is by allowing various categories of the community to use the institutions' buildings and educational premises—libraries, laboratories, sports facilities, etc. This approach implies that higher education institutions must also devote an appreciable part of their efforts to cultural promotion activities such as conferences, exhibitions and film shows which will induce large sectors of the population to enter the premises of universities and other higher education institutions and to take part in their life. The various sectors of the community must in fact

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AIU House

From our Staff Reporter

The 7th of March 1979 would remain an important landmark in the History of AIU. On that day in the presence of a distinguished audience including something like 60 Vice-Chancellors, educationists and others connected with higher education, Dr. P.C. Chunder, Union Minister for Education, Social Welfare & Culture laid the foundation stone of the AIU House at Plot No. 16, Kotla Marg, New Delhi.

Dr. C.R. Mitra, Director, Birla Institute of Technology and Science and the President of the Association of Indian Universities received the Minister. In his welcome address Dr. Mitra referred to the excitement prevailing on account of a cherished dream of the AIU which was now about to be realised. A message which had just been received from the President of India wishing the function

all success was read out by him.

Addressing the assembled Vice-Chancellors and other invitees,

Dr. Chunder spoke in appreciative terms the role AIU had played in the matter of development



Dr. C. R. Mitra, President AIU, receiving the Chief Guest, Dr. P. C. Chunder, Union Minister for Education and Social Welfare.



A view of audience at

and coordination of higher education in this country. In particular he referred to two problems which were facing the universities and which were of some immediate concern. These problems were the student unrest in universities and mass copying in examinations. He drew particular attention to the books on 'Question Banks' and other related publications in the field of examination reform brought out by the Association of Indian Universities. He cited the example of the Examination Committee in Calcutta University and said sometime hard decisions had to be taken. He expressed the hope that AIU and the Vice-Chancellors would continue their endeavours in the development of higher education and relating the same to the national needs of this country.

The Secretary of the Association of Indian Universities, Shri M.S. Ramamurthy, proposed a vote of thanks.



Dr. C. R. Mitra, President AIU, showing the model of AIU House to Dr. P. C. Chunder.



the foundation stone laying ceremony of AIU House.

Panel Discussion on Universities and National Development

(From our Staff Reporter)

A panel discussion on Universities and National Development was organised by the Association of Indian Universities. This followed the foundation stone laying ceremony of the AIU House on 7th March, 1979.

The panel consisted of Dr. Atma Ram, Chairman, National Commission on Science and Technology, Prof. Satish Chandra, Chairman, University Grants Commission, Shri P. Sabanayagam, Secretary, Ministry of Education & Social Welfare, Dr. J. D. Sethi, Member (Education), Planning Commission, Dr. S. Varadarajan, Chairman & Managing Director, Indian Petrochemicals Corporation Ltd, Dr. D.V. Kapoor, Chairman, National Thermal Power Corporation Ltd, Dr. H.N. Sharan, Director, Bharat Heavy Electricals Limited and Mr. Bazle Karim, Additional Secretary and Director-General, Bureau of Public Enterprises.

Dr. C.R. Mitra, President of the Association, introduced the panelists to the Vice-Chancellors and others who were present on the occasion.

Dr. Varadarajan, in his opening remarks, stressed the need for 'quality' in Higher Education. Mr. Bazle Karim informed that since knowledge was doubled once in 7 or 8 years, there was a need to produce graduates/postgraduates with suitable intellectual abilities and skills to adapt to changing needs. He felt strongly that success and progress in various sectors depended on the quality of products from universities as these formed the 'inputs' for employing organisations. Dr. Atma Ram, in his chairman's remarks, referred to a dichotomy that existed. On the one hand there was unemployment while on the other, the right type of men were not available to fill various positions. He felt that there was a dearth of technicians in all fields. He strongly pleaded for a change in approach/content

in our higher education particularly in professional fields. It was a pity, he said, that the content and curriculum in Indian universities were based on those of western countries without any reference to the requirements of our country. Instead of concentrating on Ph.Ds and D.Sc.s, he felt, that universities in India must concentrate on development of appropriate skills and it should be the endeavour to produce a 'generalist' (even in professions like medicine, engineering) than a 'specialist'. Talking of 'student unrest' Dr. Atma Ram felt,

in development of industry; the interaction between engineers/industry was inadequate. Practising engineers must have 'updating' courses while Research and Development work in universities and industries must be related.

Dr. Sethi deplored the decline of institutions in general from a 'left over' system of Education from British and the massive linear expansion since then without any kind of integration and techno-economic optimisation. He felt that universities aligned themselves to an 'import substitution' system; prepared their graduates/



Dr. S. Varadarajan addressing the members at the panel discussion held in New Delhi.

that this was mainly because of irrelevant courses, lack of ability of teachers to enthuse students and due to lack of physical facilities. He also deplored the emphasis on training placed by various industries/organisations before the graduates/postgraduates were fitted into job positions. He summed up saying that the reluctance on the part of experienced teachers to teach undergraduate courses was one of the major factors in 'student unrest'.

Speaking of the role of universities in national development, Dr. Sharan felt that professional students particularly of engineering and technology, were not trained adequately to participate

postgraduates to suit the needs of foreign collaboration/foreign technology. He was of the view that without any base for our system, we were now launching on 'export promotion'. He pointed out that medical education ignored 'health services'. Universities did not have courses on health services. There were dichotomies; urban-rural and industry-agriculture. He suggested that universities must try to impart 'relevant' education.

Dr. Kapoor, made a few suggestions to remedy our education system, as a short term measure. While he thought that 'quality' consciousness was very low, the practical bias in education was

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54th Annual Session of AIU meets at Patiala

The 54th annual session of the Association of Indian Universities was held on 8th and 9th March 1979 at the Punjabi University, Patiala. Mr. Justice S.S. Sandhwalia, Chief Justice of Punjab and Haryana High Court who inaugurated the session said the last decade had seen an unprecedented expansion of higher education in the country which in turn had resulted in decline of academic standards. The university system should now be geared to adjust to the increased rate of enrolment to maintain standards. The standards of attainment at college and university level were uneven all over the country. He hoped that the meeting would discover a solution to this crucial issue. The limited funds allocated to higher education during the Sixth Plan would be an inhibiting factor. We would now be entering an era where we would have to live with the fact of reduced resources. The best way would be to make full use of the resources and our capacity for hard work. The Chief Justice said the real contribution to solve the problem had to come from thousands of teachers who man our educational institutions. How to get the message across to them, how to arouse their enthusiasm and how to make them rise to the most formidable task that confront us today. The Chief Justice said the starting point of this new emphasis should be our interest in the welfare of students. The educational endeavour had to revive the affectionate and mutually supportive relationship between student and teacher.

Dr. C.R. Mitra, President of the Association of Indian Universities called for creation of an academic community out of the diverse elements which bedevilled the universities. He emphasised that a community could develop only through shared experience, through unity in action and thro-

ugh a sense of identity. He underlined the need for a proper theory of knowledge and said that it was only such knowledge as was not alienated from its origin and its world of practice, which could become a blue print for action. He stressed the need to develop a general theory of collective action which could provide in specific situations the rationale for collective efforts towards community goal. Dr. Mitra iden-

we have added one more of such procedures without making any fundamental analysis as to what system of management we need for the task in hand. In a vast country like ours, one university will differ from the next in such details that a self-assured management technique and method could not be imposed from outside. Each university had to learn to discover its own techniques and rules of procedure. Referring to the third



Dr. C. R. Mitra, delivering the Presidential address at the inaugural session of AIU.

tified the three crucial matters for group discussions at the meeting and hoped the discussion on cost of higher education would give insight into complex process and yield concepts and strategies by which excellence could be achieved through less expenditure. In costing of higher education the process rather than the product should be the main concern. Dr. Mitra said that we never modified the archaic administrative procedures that we inherited from the period prior to Independence, but

topic for group discussion 'Linkage with Environment', Dr. Mitra said the involvement had to come from a sense of humility and not through the big-brother approach that was often flaunted. Indeed, this should be a process through which we partly paid back to our society what the society had so generously given us. As long as linkage with the environment remained a discrete and unintegrated component of our task and purpose we would for ever remain alienated from our

environment and only invite further justified hostility. If we did not know how to create bridges within the university between department and department, between faculty and faculty, between students and teachers and administration, our claim that we could bridge the gap between our ivory tower and the environment would be exposed as a hollow claim.

Dr. Amrik Singh, Vice-Chancellor of the Punjabi University welcomed the vice-chancellors and other delegates attending the session. He detailed the contribution of the university in the field of higher education during the recent

exception to. At the same time in order that university standards may not go down the Association was of the view that remedial courses should be organised for such of those people who did not fulfil the minimum eligibility requirements for seeking admission to various courses in universities. The cost of running such courses should be fully taken care of by the concerned governments.

Prof. Satish Chandra, Chairman of the University Grants Commission, who met the vice-chancellors explained the mechanics of how the reports of the visiting committees came to be accepted by the Commission. He



Dr Amrik Singh, Vice-Chancellor, Punjabi University, delivering the welcome address at the inaugural session of AIU.

years. The university had been the venue of many national and international conferences. He said one of such international seminar on sculpture was proposed to be organised by the university in the next year. Some of the world famous sculptors, one of whom worked with Picasso, would spend about six weeks at the university.

The annual session considered the topic of reservation of seats and job opportunities for economically backward class of society and others. The Association felt that as a matter of social justice reservations for such categories of people could not be taken

pointed out that during the sixth plan period the departmental profile prepared by the UGC and vetted by the different subject panels would form the basis of an objective assessment to be made by the visiting committees that may be appointed by the UGC for assessment of the sixth plan needs. In view of the limited funds available to the UGC as sixth plan allocations the UGC would be forced to curtail the plan schemes that may be submitted by the developed universities. Such universities could however take advantage of the "quality programmes" that are being operated

by the UGC for which the UGC would be able to find support.

Arising out of the above, the Association decided that the Planning Commission and the Union Ministry of Education should be approached for raising the allocation for higher education at least to the level which obtained in the fifth plan. This of course would not mean re-ordering of the priorities already enunciated by the Government of India, namely, that primacy of attention should be given to primary education and adult education.

One of the more important decisions taken by the Association related to the admission of universities to the membership of the Association. Any statutory university or institution of national importance or deemed to be university could now apply and become a member of the Association on a provisional basis for a period of three years after the application had been considered by the Standing Committee of the Association. To qualify for regular membership however the Association would appoint a visiting committee which will give its recommendations noting the conditions within the broad framework indicated in the rules that the university would have to fulfil before it could be considered for regular membership. Also the Association would now undertake a review of all universities once in a period of 12 years.

With a view to safeguarding the autonomy and work as a watch dog on this aspect the Association would soon be constituting a sub-committee. Likewise with a view to measuring the academic standards of the university a separate sub-committee is to be constituted.

Personal

1. Dr. C.R. Mitra, Director, Birla Institute of Technology & Science, Pilani, has been elected President of the Association of Indian Universities, for the year 1979-80.

2. Prof. Lalit M. Aggarwal has taken over as Director of the All India Institute of Medical Sciences.

Group Discussions at AIU Session

As part of the 54th Annual Meeting of the Association of Indian Universities held on 8th and 9th March 1979 at the Punjabi University, Patiala, three Group Discussions were organised.

The group discussing **Linkage with Environment** was chaired by Dr. Ramaranjan Mukherjee, Vice-Chancellor of Burdwan University. In all, ten papers dealing with the theme had been received for discussion in this group. Prof. R.S.N. Sinha, Principal of S.K.R. College (Bhagalpur University); Dr. A.S. Atwal, Dean at the Punjab Agricultural University and Dr M.V. Pylee, Vice-Chancellor, Cochin University, personally presented their papers to the Group.

Prof. Sinha said in his paper that university campuses could not keep away from the environment existing around them. The problem of environment may be identified as the socio-economic, political and natural environment. The former influences and leaves their marks on the people in campuses and society. Often socio-economic pollutants namely distrust, disbelief, strife and strike abound universities. It therefore becomes pertinent to examine and study the socio-economic and political set up within which universities function. Universities should design courses which might suggest the proper regional development through a better location of industries and human settlement policies. The paper highlighted the pollutants of the physical, social, political & economic environment.

Dr. A.S. Atwal, emphasized that industrialization/urbanization and also careless exploitation of natural resources had changed the environment and the eco-system. The paper emphasized the need for environment education at all levels, i.e. from adult and primary education to college and university levels. Although some problems like wide-spread illiteracy, resources, public opinion and climate condi-

tions might come in its way, that could be overcome by systematic planning for imparting education. The plan may include education for 'general public' where subjects like population, human environment and its deterioration, epidemics, public hygiene, industrial pollution etc. can be taught through mass communication. At the school level some general courses could be introduced that would create awareness about the growth of human population and its influence on resources, usage of land, water and forest wealth and public sanitation, etc. At the college level science groups might have advanced courses for environment and eco-system. Arts courses might again impart some advanced knowledge about the general environmental problems. At the university level along with advanced knowledge in specific area pertaining to medicine, agriculture and other similar institutions, department of environment science might be created. Here curricula and courses on environmental science might be prepared.

An expert committee may also be appointed to work out the details of curricula for environmental education at various levels and to make recommendations about starting the institute of environment science in some of the universities.

Dr. Pylee, Vice-Chancellor of Cochin University presented details of the practical ways of linkages of his university with the industrial environment around. The University has recently decided to start a programme of continuing education for the technical personnel working in various industrial and government establishments located in Alwaye-Cochin industrial belt. The need for non-formal education as an integral part of continuing education has been increasingly realised and the University of Cochin wanted to extend its services in that direction. The scheme, apart from in-

creasing the employability on the individual, tended to bridge the communication gap that existed between the industry and the university. It was thus a need-based programme in keeping with corporate objective of the University.

With a view to assessing the feasibility of programme of continuing technical education, a conference was convened in August 1978. It was attended by delegates from industrial organisations and professional institutions in Greater Cochin. Proposal for certain courses were approved. As the first step towards implementation a survey of the individual needs of the practising technical personnel and the institutional needs of the industry was undertaken. Subsequently the University convened a two-day conference of outstanding persons in the fields of humanities, science and technology from all over India to discuss development possibilities of the university in different areas of study and research.

After thorough deliberations and also taking into consideration the proposals of the All India Council for Education, certain courses had been evolved.

There was a lively discussion on various issues related to linkage with environment. Prof. Mukherjee, Vice-Chancellor of Kalyani University, drew the attention of the group to the multidimensions of national development and stressed on two components namely Material or Objective and Moral or Subjective. Both the environments intra university and extra university must be considered. He appealed for restructuring courses, orienting courses, orienting them to the needs of grade, commerce, industry and society in general.

Dr. W.M. Kalamegh, Vice-Chancellor of Nagpur University pointed out that the gap between University and society must be bridged and with concrete examples drawn from his University experience, stressed the need to restructure courses to include certain areas of national development so that job orientation/work experience/self reliance/confidence

are created in the products from Universities. He suggested that education must integrate institutional training/practical training/field work/extension services. Research and teaching programmes must be geared to society.

Dr. K.S. Bilgrami, Acting Vice-Chancellor of Bhagalpur University suggested that extension services may be made compulsory both for undergraduate and post-graduate students. Prof. R.G. Takawale, Vice-Chancellor of Poona University gave details of experiments in Poona University in regard to interdisciplinary schools at P.G. level, energy studies, development of appropriate technology with the help of interaction with a group of villages.

There was also a suggestion that the universities and the AIU must link up with voluntary organisation in rural areas in the matters regarding guidance, training and studies to link universities with the rural environment.

Shri M.R. Apparow, Vice-Chancellor of Andhra University, gave details of Geo-engineering departments linkage with environment and courses for illiterate masses, adult education, continuing education etc.

Dr. N.L. Nadda, Vice-Chancellor of Ranchi University suggested that field work must form a part of curriculum and information regarding experiences of various universities must be disseminated.

Prof. Raja Ram Shastri, Vice-Chancellor of Kashi Vidyapeeth suggested that intensive studies to identify 'Core Curriculum', restructured to the needs of environment, may be undertaken by AIU as is being done by UGC to some extent. Prof. P. Sivalingam, Vice-Chancellor of Anna University of Tech. strongly suggested that universities must go to villages and must offer courses to develop skills in engineering/commerce/trade suited to village needs.

RECOMMENDS:

1. The Association of Indian Universities may take steps to formulate new courses restructured to suit the needs of local, regional and national development.

2. Linked with the above, will be a study of existing practices of universities that have restructured their courses to link them with environment. This information of the existing practices in various universities may be critically analysed to bring out the strengths and weaknesses so that this could be valuable to other universities.

3. AIU may undertake studies specific to certain universities, relating to linkage with industry/trade/business/commerce with a view to identify problems of implementation and suggest (a) structural changes (b) installation of planning & implementation system c) installation of appropriate information system to cope with changing problems of linkage with environment.

4. AIU may undertake studies to link teaching/research extension to evolve courses on local and regional basis keeping in mind the problems posed by equivalence of courses in various universities.

5. AIU may assist universities in designing and conducting training workshops for teachers in implementing restructured courses.

Dr. (Smt.) Madhuri R. Shah, Vice-Chancellor of S.N.D.T. Women's University, was the chairman of the Group which discussed INTERNAL MANAGEMENT OF UNIVERSITIES.

Papers were contributed by Prof. T.B. Mukherjee, Prof. R. Bandyopadhyay, Prof. P. Sivalingam, Prof. T.S.K.V. Iyer, Shri D.K. Ghosh, Prof. V. Natarajan and Shri A.K. Chaudhury.

Prof. R. Bandyopadhyay of the National Institute of Bank Management presented his view-points relating to linkage and structure of the present uni-disciplinary system and explained the methodology and objectives of a flexible and multi-disciplinary system whereby the internal system of planning [through cooperation] would be possible. The inherent weakness of the prevailing uni-disciplinary structure and the functional character of organisation of faculties were highlighted. Dr P. K. Ghosh, Dr A. N. Bose, Prof. Ramesh Mohan and other

Vice-Chancellors wanted clarification as to how the structure of multi-disciplinary proposition could fit in with the present uni-disciplinary system. The points of inter-disciplinary collaboration among faculties as also the style and pattern of exchange of ideas among different departments were explained by Prof. Bandyopadhyay. The need to forge links with the environment was also elucidated. Real life problems were multi-disciplinary. The structure and managerial processes of today were resistant to change. He advocated structural changes, installation of participative planning system and appropriate information system to cope with the problems of linkage with environment. He felt that dynamic leadership at all levels of University administration and academic tiers was necessary.

The multi-disciplinary approach was a technique of interaction with different departments and each University with its unique features would be able to suggest solutions for its own problems. A common framework with a common parameter could apply to involve all disciplines if principles were adopted. The idea was to break the present rigidity and to provide an environment that would facilitate linkage.

Dr T.B. Mukherjee Vice-Chancellor, Patna University, presenting his paper, emphasised the procedural aspects of appointment of Vice-Chancellors, the constitution of the Senate, Syndicate as also the composition of the statutory authorities of the Universities. The major problems of administration and academic and other problems of management, according to Dr. Mukherjee, were due to the relations between the State Government and the Universities. He advocated decentralization of administration, appointment of at least three Pro-Vice-Chancellors to share the burden of administration and assignment of definite responsibilities on academic staff for conduct of examinations. In suggesting the need for a sort of security force consisting of teachers and students to be main-

tained by the Universities themselves, he highlighted his personal experience.

The Vice-Chancellors who participated in the discussion, however, differed with the views expressed by Dr Mukherjee and emphasised aspects of leadership expected from the Vice-Chancellors in the administrative and academic management functions of Universities. Creation of a security force did not find favour with members.

Dr. P. K. Ghosh, Vice-Chancellor of North Bengal University raised the question of representation of students and non-academic staff, and the pattern of such representations on the statutory bodies. Dr. A.R. Desai of South Gujarat University pointed out that the policy of 'elected Vice-Chancellor' failed. He urged that the administration should be skilfully and carefully run.

Shri A.K. Chaudhury, Registrar of Burdwan University presented his paper and mentioned that there was great deterioration in the management of Teaching and Research and in the administrative components of the Universities. There were also the problems of management of students' sector and non-teaching staff divisions. He emphasised the need for involving all the major sectors in the management of Universities in a statutory way so as to dispel the distrust among different sectors of University administration.

The Vice-Chancellors who participated in the discussions emphasised on the feed-back and other procedures of evaluation of teachers. They deplored the lack of dedication of teachers in their role as academics.

The Chairman summed up the discussions with the observation that the outdated pattern of administration needed change to meet newer responsibilities which had devolved on Universities and the expansion of Universities in the light of modern concepts of management. She emphasised the need for better human relations among various sectors of the universities. The Chairman advocated distribution of powers among functionaries and an imaginative and creative management.

The session on COST OF HIGHER EDUCATION was chaired by Dr. Ravi Prakash, Vice-Chancellor of Bhopal University. In all, four papers namely, Cost of Higher Education—Methodology for Measurement by Dr. S. K. R. Bhandari; Unit cost of Education—A case study on Hindu College, Delhi University by Dr. G.D. Sharma; Cost of Higher Education (received from Burdwan University) and Economics of Higher Education—A BITS Experience by Prof. V. Krishnamurthy were submitted. The papers were based on case studies. Dr. Bhandari and Dr. Sharma personally presented their papers to the Group.

Dr. Bhandari attempted to clarify the conceptual problems involved in the measurement of costs. He pointed out that costs should be measured separately for teaching and research, administrative services, students facilities, employees, residents and public services. He suggested that direct and indirect costs should be examined separately. Problems arising in the distribution of administrative non-specific expenditures should be carefully tackled. He, however, adopted 'proportion of direct expenditure' for distribution of such expenditure to various faculties and departments. Dr. Bhandari also pointed out that accounting and reporting method suffered from many limitations and that caused many problems in measurement of costs.

In the course of the discussion on the paper Dr. B.S. Bhanage Vice-Chancellor, Shivaji University, observed that as the cost of the education, costs incurred by institutions and fixed and revenue costs involve different methodology of measurement, the concepts of costs used for measurements needed to be clearly defined. Dr. P. D. Hajela, Vice-Chancellor of Allahabad University pointed out that while examining costs one should take due care of fixed cost of buildings and the costs on other infrastructure. Prof. R. C. Mehrotra, Vice-Chancellor, Delhi University pointed out that apportioning non-specific administrative expenditure to various faculties should be based on proper indicators.

Dr. Sharma while presenting

his paper clarified the concepts of unit costs and mentioned the problems which were likely to be faced in estimation of unit costs. He pointed out that dysfunctional way of presentation of budget is a major hurdle in estimation of unit costs. He also pointed out that unless unit cost was examined separately for each faculty and subject, cost studies normally did not unfold areas where economies could be affected. He, therefore, examined the unit cost for each faculty and subject separately. Here distinction was made between in-put and out-put costs. The size of class/course where unit cost was the least and wastage due to failure and dropouts were also estimated. The author suggested that there were certain subjects where, because of less number of students, unit cost was ordinarily high. Instructions in such subjects can be organised in collaboration with other colleges situated in vicinity. He pointed out that wastages in higher education could be reduced by providing counselling and coaching to the students coming from educationally poor background. He suggested that budget format presently used by educational institutions suffered from many limitations and a new format based on functions and activities may be evolved. Here help of programming, planning, budgeting system could be taken.

In the course of discussions, Prof. Hajela pointed out that since there was a difference between industry and education concepts of wastages and costs should therefore be carefully applied to education.

Dr. Mansoorali observed that due to reduction in in-take a lot of infrastructural as well as staff facilities remained unutilized. This raised cost of education. Therefore, studies should be conducted to find out surpluses resulting due to less intake and such surpluses should be utilized for other activities.

Professor B. Misra, Vice-Chancellor, Utkal University, and Dr. N. Shanmukha Rao, Vice-Chancellor, Jawaharlal Nehru Technological University, wanted to know whether there was any optimum size of class/course or

institution where unit cost was the least. On this point Dr. Sharma clarified that although his study showed some relationship between enrolment and per unit cost, the results could not be generalized because of the small number of observations. However, it appeared that costs in arts, social science and commerce faculties with less than 40 number of students was invariably high. Further, as the size of enrolment increased, cost declined. However, because of small number of observations no definite conclusions about optimum size could be drawn. It only suggested that some more studies needed to be conducted in this area.

Dr. Krishnamurthy of BITS in his paper observed that the task before the universities was to continue the educational growth with limited resources. In this context, the money-educational growth relationship needed to be reviewed. An attempt in this direction had been made by BITS. In this institution reduction in cost had become an integral part

of the processes of educational innovations and growth. This was achieved through introduction of flexible courses and restructuring of the faculty and department. This helped in utilizing the faculty as well as infrastructural facilities in the best possible way that reduced the unit cost and helped in the objective of continuation of educational growth with limited resources.

Burdwan University in its brief note observed that study on unit cost was an important aspect for institutional planning. However, the amount spent on higher education had to be viewed from the angle of contribution of higher education to national development.

The group in general was of the opinion :

- (a) AIU should undertake large scale studies on unit cost and make findings of such studies available to the member universities.
- (b) Studies should be conducted to find out the optimum size of class/course / institution

where per unit cost of supplying education was the least.

- (c) It was observed that budgeting format and methods of reporting suffered from many limitations and studies should be conducted to recast the budget format. This could be done by a team of researchers and practitioners in this field.
- (d) The resources available for the universities in future were likely to be less but the major concern of all universities was to continue with educational growth and development. The AIU should therefore conduct studies to find out how by restructuring courses the objective of educational growth with the limited resources could be achieved. Reduction in unit cost should become part of processes of educational innovations and growth.

The reports of the three group sessions were presented at a plenary session and these were generally endorsed. □

Panel Discussion on Universities and National Development

(Continued from page 152)

inadequate because of lack of industrial/work experience for teachers and lack of exposure to 'world of work'.

Dr. Satish Chandra, drew the attention to the fact that while drastic changes were to be brought into the educational system, those who want such changes were not serious and there was always a 'we and they' syndrome. He differentiated between the 'inside' of the system and that of 'outside' of the system in relation to all kinds of demands put on the educational system.

Dr. Varadarajan, in his concluding remarks, felt that in India, performance evaluation was not in existence and felt that periodically, people must be evaluated on their 'performance'. There must be increasing 'accountability' to the system and felt that universities must change and promote thinking/action/accountability. Work experience/Managerial education must be built in the form of courses which should not be regimented, because the real world was not regimented. He deplored that 'originality'

was not fostered, valued and encouraged and also the fact that there was no systematic follow-up study or research on university products. There was very little 'experimentation' and therefore there was 'fragmented education' with little relevance.

Mr. Sabanayagam wanted universities to think of doing many things to bring in linkage with rural setting without much of men-material-money demands. He felt that universities must participate in a big way in national development especially in the areas of rural development, adult education etc.

'What ought to be done' had been discussed a great deal felt Dr Amrik Singh, Vice-Chancellor, Punjabi University. He said that certain things could not be done because things were as they are; he stressed that except for a small number of devoted teachers, rest of them were there because they were there. Most of them were geared to 'non-performance'. He strongly felt that realistic policies in terms of recruitment promotion/conditions/ethos of work had to be

evolved in addition to the improvement of the 'working' force. Every year, granting that about 5000 good, new teachers are recruited, it will take 3 or 4 decades before higher education will have an excellent work force. Mr. Noor Mohammed, Member, UPSC, registering his reactions felt strongly the absence of job orientation, the ability to 'think' on the part of products from universities and also finally loss of moral values. Talking of positive steps to improve the system, Dr Ram Joshi, Vice-Chancellor, Bombay University felt that curricular orientations, modernisation of syllabi building in the components of national development, are to be thought off; courses must take into account applicability, usability, immediacy experientiality and interdisciplinarity.

Finally Dr. (Smt.) Madhuri Shah, pleaded for policy research, greater need for flexibility in curriculum, management etc. She felt that there was a need for changing assessment and evaluation procedures of student's, teacher's and others' performances. □

Commonwealth Meet on youth programmes

President Sanjiva Reddy inaugurated recently the commonwealth meeting on government policy on youth programmes in Chandigarh. He said that youth activities in various countries needed to be coordinated and the policy should be framed consistent with the social and economic goal of the participating countries. The President hoped the common youth programme which was sought to be evolved at the conference would provide a firm base for the development of youth and its involvement in the community activities. Youth could be an asset to society if they were properly understood, channelled and appreciated by the society. Shri Reddy appreciated the effort of the Commonwealth Secretariat in evolving a common youth programme for the participating countries. He referred to the National Service Scheme and poin-

programme was initiated as a defensive reaction to the student unrest witnessed all over the world. The purpose of the present effort was to make youth socially constructive. He stressed that youth should be heard in the corridors of power and society should be receptive to their problems and their views. He said the Commonwealth Secretariat would hold a conference in May at Colombo to deal with the problem of youth unemployment.

The Conference was attended by about fifty participants from twenty five countries.

Re-orientation of medical education

A provision of Rs five crores has been made in the central budget for the next financial year for re-orientation of medical education in the country. The scheme initiated last year on an experimental basis aims at involving medical colleges for providing

sor football, athletics and tennis teams to the World University Games scheduled to be held in Mexico in September this year. The programme for selection of players and their training include three camps and preliminary selection trials for footballers and athletes. The tennis players would be selected in consultation with the All-India Lawn Tennis Association. The first camp for footballers would be organised in May as part of the coaching-cum-competition programme. The zonal teams already selected would be admitted in this camp followed by preliminary selection trials in June. Twenty-five selected players would be called for the second camp and the final camp for the team will be organised in August. The camps for athletes would also be organised in May and June followed by preliminary selection trials in July. The venue for the camps and selection trials will be finalised shortly.

Sri Venkateswara Varsity convocation

Delivering the convocation address at Sri Venkateswara University, Dr. Raja Ramanna, Scientific Adviser to the Defence Ministry emphasised the need for an invigorating new philosophy to encourage the coherent effort of the community to produce a new order. He said there was a lack of self-confidence in the people and faith in the future of the country. People rushed to other countries for assistance at the slightest sign of failure which could be attributed to lack of their self-confidence. Dr. Ramanna said that the new philosophy would lead the society away from this darkness. We must have regard to the arts, particularly music, painting, poetry and other literary and cultural activities which led to gentleness of spirit so necessary in this competitive world. We had seen how civilisation had disappeared due to wrong philosophy, inaction and due to complete surrender to self-destructive forces. The society had remained static because it had not allowed scope for originality. Dr. Ramanna said if we did not encourage originality and remained satisfied

CAMPUS NEWS

ted out that only one-tenth of the students in universities participated in this programme. He stressed the need for greater participation of youth in developmental activities, including the adult literacy programme launched throughout the country.

Dr. P.C. Chunder, Union Education Minister in his welcome address referred to the national adult literacy programme which he said was a magnificent opportunity to involve the youth in the development of the nation. Development of youth should be viewed as a means of international cooperation. Dr. Chunder said the entire value system and human behaviour were under a searching scrutiny and lack of communication between the old and the young needed the deliberate effort to bring them together. The problem of youth was the problem of development of the nation.

Mr. S.S. Ramphal, Commonwealth Secretary-General in his keynote address said the youth

relief and comprehensive health care through the selected primary health centres and familiarising the undergraduates with the problems of the rural community. The medical colleges would be linked with the district, tehsil and taluk hospitals and primary health centres. The central government had selected twenty-five medical colleges in the country during the last year and provided Rs five lakhs to each hospital under this scheme. Most of the medical colleges were selected from the States of Andhra Pradesh, Maharashtra, Kerala and Uttar Pradesh. The scheme provides that the government medical colleges in the states will accept complete responsibility of promotive, preventive and curative health care of at least three community development blocks in the district where the medical colleges are located.

Teams for Universiad

The Association of Indian Universities has decided to spon-

with the present conditions, there could be no progress.

The convocation was presided over by Shri K.C. Abraham, Chancellor of the University and Governor, of Andhra Pradesh.

Himachal Varsity to conduct research on Indology

Himachal Pradesh University proposes to start Shri Vivekanand Research Institute of Indology as its integral constituent. The University has submitted the proposal involving an expenditure of Rs ten lakhs per year to the state government. The proposed institute will cover studies on the distinctive features of religion, philosophy, culture including tantra, mantra, yantra, gyan bhakti, rajayoga, hathayoga and karmayoga besides other aspects. The Institute will have the Departments of Yoga and Meditation, Indian Culture and Tradition, Religion, Ethics, Spiritual Science, Para-psychology and Indian Philosophy. All the departments will have their independent libraries and will include collection of all important books including rare volumes and manuscripts. The Institute would also publish a research journal with distinctive features of the subjects.

Combined universities Badminton team

Combined Universities Badminton Team gave a good display of their courtcraft and captured the hearts of the spectators in 43rd National and 34th inter-state badminton championships held recently in Udaipur. In the semi-finals, Uday Pawar and Vikram Singh blasted their way into finals by capturing absorbing wins over Maharashtra's Sanjay Sharma and S. Vakil. In the third singles, however, Jaidev Merchant of the universities conceded his match to P. Gandhe in order to keep himself fresh for the crucial doubles. The judgement of the coach, Shri P. Pramanik paid rich dividends and in partnership with Vikram Singh beat a formidable Maharashtra combination of Anil Pradhan and S. Hukku at 15-12; 8-15; 17-14. The combined universities in the finals faced an

uphill task of facing national best team in Karnataka. The universities team however caved in after giving a fight. The result would have been different had the names were drawn otherwise. The lone victory achieved for the universities was due to the great play of Vikram Singh who had made his presence felt every time at the court.

Committee on environment

The Central Government has reconstituted the National Committee on Environmental Planning and Coordination with Dr. B.P. Pal as its Chairman. The Committee will aim at improving environmental education in the country, review policies and advise the government, educational institutions and industry. It will advise on the conservation of nature and promote research in environmental problems.

Kurukshetra Varsity library

The Kurukshetra University Library has preserved forty-one rare unpublished works which are not available in any other library in the country. These are among the five thousand

manuscripts preserved in the library. Some of these manuscripts are three hundred years old; the oldest being a three hundred forty-seven years old sanskrit work on Sastrology. Gun Path Vibitri, a two hundred year old work on sanskrit grammar is among the manuscripts on which research is being conducted.

Sixth plan provision for education

While inaugurating the State Educational Conference in Hyderabad recently, Dr. P.C. Chunder, Union Education Minister, said that an amount of Rs. 900 crores had been allotted for education in the sixth five year plan. He said the plan would lay emphasis on adult education with an allotment of Rs. 200 crores. The Government was planning to cover ten crores of persons under the adult education programme in the next ten years. There were twenty three crores of illiterates in the age group of 15 year while 6.5 crores of children were not going to school at all. The Union Minister said the education problem was stupendous and it had to be tackled on a war footing.

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Sd/-
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Conferences, Seminars & Workshops

March-May, 1979

Date	Title	Venue	Sponsoring Body
1 Mar—21 Mar	Summer Institute in Aquatic Biology	Surat	South Gujarat University
5 Mar— 7 Mar	Training in computers for managers	Bombay	National Productivity Council
5 Mar— 7 Mar	Workshop on effective provisioning & spare parts management	Poona	Central Institute of Road Transport
5 Mar— 8 Mar	Symposium on production and utilisation of forest products	Jammu	Regional Res. Laboratory
5 Mar—16 Mar	Advanced computer systems	Hyderabad	Administrative Staff College
5 Mar—17 Mar	Course on materials management	Hyderabad	Administrative Staff College
5 Mar—17 Mar	Training Methodology	New Delhi	Indian Inst of Public Admn.
5 Mar—17 Mar	Workshop on Corneal diseases	New Delhi	Dr Rajendra Prasad Centre for Ophthalmic Sciences
6 Mar—12 Mar	Workshop/Seminar on Teaching methods in organisational behaviour	Calicut	Univ. of Calicut, Dept. of Psychology
7 Mar— 9 Mar	National Conference on industrial tribology	Dehra Dun	Indian Inst of Petroleum
9 Mar—11 Mar	All India Seminar on Sociology in the 1980's	Trivandrum	Univ of Kerala, Dept of Sociology
12 Mar—15 Mar	International Cashew Symposium	Cochin	Central Plantation Crop Res. Inst
12 Mar—24 Mar	Mineral engineering	Dhanbad	Indian School of Mines
14 Mar—24 Mar	Integrated approach to budgeting	New Delhi	Indian Inst of Public Admn.
15 Mar—17 Mar	Workshop on Safety & accident prevention	Pune	Central Inst of Road Transport
15 Mar—21 Mar	Indo-British exhibition and seminar on the rehabilitation and Vocational education of the handicapped	Delhi	Min of Ed and Social Welfare and British Council
15 Mar—22 Mar	Workshop on Hospital infection with special reference to gram negative bacilli	New Delhi	AIIMS, Dept of Microbiology
15 Mar—24 Mar	Seminar/Workshop on the syllabus for B.Ed.	Rohtak	C.R. College of Education
16 Mar—17 Mar	Seminar on development of the theatre in the 20th century	Calcutta	Rabindra Bharati University
16 Mar—18 Mar	Seminar on Modern period of Hindi Literature	Delhi	School of Correspondence Courses, Univ of Delhi
17 Mar—18 Mar	Seminar on Cancer of the breast	Varanasi	BHU, Inst of Medical Sciences
17 Mar—19 Mar	All India Symposium on Food Proteins	Madras	Loyola College
19 Mar—21 Mar	Seminar on the teaching of Hindi language and literature	Delhi	Ram Lal Anand College
19 Mar—26 Mar	Workshop on retinal detachment	Aligarh	Inst of Ophthalmology, A.M. Univ.
19 Mar—31 Mar	Regional workshop on curriculum development	Vellore	Christian Med College and Hospital
21 Mar—24 Mar	Symposium on Celestial Mechanics	Bhagalpur	Bhagalpur University
26 Mar—30 Mar	1979 International conference on fracture mechanics in engineering applications	Bangalore	National Aeronautical Laboratory
26 Mar—31 Mar	Pillar extraction in thick seams	Dhanbad	Indian School of Mines
29 Mar—31 Mar	Symposium on Centre-State relations in India	Kumta	Dr AV Baliga College of Commerce
March 1979	Experimental techniques in fluid mechanics	Bangalore	Indian Institute of Science
March 1979	Seminar on Sobolev spaces and its application in fluid dynamics	Surat	SV Regional College of Engg. and Technology
Mar/April 1979	Materials technology in constructive methods in civil engg.	Bangalore	Indian Institute of Science
End of Mar 1979	Round table conference on transfer of technology in mineral industry in developing countries	Delhi	Institution of Engineers
Last week of Mar	Seminar on human relations and productivity	Dharwar	Karnatak University
2 Apr— 4 Apr	National symposium on positron annihilation	Delhi	Univ of Delhi, Dept of Physics
2 Apr—13 Apr	Workshop on the study of development of teacher effectiveness through teaching practice	Poona	SNDT College of Education for Women
2 Apr—12 May	All India Summer Institute on Theatre Practice	Calicut	School of Drama, Calicut Univ
4 Apr—25 Apr	Short Term Institute in Micro teaching for teacher educators	Bombay	PVDT College of Edn for Women
10 Apr—30 Apr	Summer Institute in Applied Solar Energy	Bangalore	Indian Institute of Science
15 Apr—31 May	Summer Institute in the Philosophy of Science	Trivandrum	University of Kerala
16 Apr—20 Apr	Management of Family Welfare programme	Bangalore	Indian Inst of Management
16 Apr—20 Apr	Refresher Course in Administrative Law for law teachers	Ahmedabad	Gujarat Univ, School of Law
16 Apr—21 Apr	Workshop on Home Science Curriculum	Cuttack	Ravenshaw College
18 Apr—20 Apr	First All India Symposium in acarology	Bangalore	Univ of Agricultural Sciences, Deptt of Entomology
23 Apr—28 Apr	Seminar on Hilbert space operator theory and its applications	Vallabh Vidyanagar	Sardar Patel University

Date	Title	Venue	Sponsoring Body
28 Apr—30 Apr	Seminar on the problems and planning strategy for small and marginal farmers of Orissa	Berhampur	Khallicote College
April 1979	Seminar on electrical testing and standardisation	New Delhi	Inst of Engineers (India)
April 1979	Seminar/Workshop on aircraft, airworthiness and air safety	Delhi	Inst of Engineers
1 May—10 May	Symposium on the culmination of social sciences	Gandhigram	Gandhigram Rural Institute
1 May—21 May	Organisation of a Summer Institute in Business Administration for College Teachers	Surat	South Gujarat University
2 May—8 May	Symposium on nuclear interactions at high energies	Rajaram-mohanpur	University of North Bengal
3 May—24 May	Short term institute in linguistics	Kurukshetra	Kurukshetra University
7 May—26 May	Summer School in Modern trends in Mechanical design of turbo-machines	Allahabad	Motilal Nehru Regional Engg College
7 May—5 June	Summer Institute in Algebra	Madras	Ramanujam Inst for Advanced Study in Mathematics, Madras
10 May—6 June	Short term institute in numerical mathematics for college teachers	Surat	SVR College of Engg and Technology, Surat
14 May—4 June	Short term institute in Organic-metallic chemistry	Lucknow	University of Lucknow
14 May—23 June	Summer Institute in Chemistry	Cuttack	Ravenshaw College
15 May—19 May	Summer Institute in Research methodology for research in industrial management and business administration	Pune	Brihave Mahavidyalaya College of Commerce
15 May—25 June	All India Summer Institute in Applied Zoology	Nagpur	Nagpur University
16 May—5 June	All India Summer Institute in recent advances in psychology	Varanasi	Kashi Vidyapith, Dept of Psychology
16 May—12 June	Summer Institute in Computer Science	New Delhi	School of Computer and System Sciences, J.N. University
21 May—8 June	Summer Institute Refresher Course in Mathematics	Kolhapur	Shivaji University
21 May—16 June	Summer Institute in applied mathematics	Madras	Madras Inst. of Technology
22 May—17 June	Summer Institute on Mathematical concepts and techniques in physical and biological sciences for college teachers	Calcutta	Jadavpur University
28 May—17 June	Summer Institute in Modern political analysis	Aurangabad	Marathwada University
29 May—9 June	22 COSPAR (ICSU)/INCOSPAR (INSA)/ISRO on aspects of Space research	Bangalore	INCOSPAR, Ahmedabad
30 May—30 June	Summer Institute on an integrated approach to momentum, heat and mass transfer	Patiala	Thapar College of Engineering
May 1979	Summer Institute in Educational Technology	Indore	Univ of Indore, Dept of Education
May/June 1979	Summer Institute in Political Science	Jabalpur	University of Jabalpur

Subject Index

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Agriculture			
12 — 15 Mar	International Cashew Symposium	Cochin	Central Plantation Crop Res Institute
28 — 30 Apr	Seminar on the problems & planning strategy for small and marginal farmers of Orissa	Behrampur	Khallicote College
5 —8 Mar	Symposium on production & utilisation forest products	Jammu	Regional Res Laboratory
Computers & Mathematics			
5 — 16 Mar	Advanced computer systems	Hyderabad	Administrative Staff College
10 May—6 June	Short term institute in numerical mathematics for college teachers	Surat	SVR College of Eng & Tech., Surat
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21 May—8 June	Summer Institute Refresher course in Mathematics	Kolhapur	Shivaji University

Date	Title	Venue	Sponsoring Body
Economics			
14—24 Mar	Integrated approach to budgeting	New Delhi	Indian Inst of Public Admn.
Education			
19—31 March	Regional Workshop on Curriculum development	Vellore	Christian Med College & Hospital
15—24 March	Seminar/Workshop on the syllabus for B.Ed.	Rohtak	CR College of Education
4—25 April	Short term Institute in micro-teaching for teacher educators	Bombay	PVDT College of Edn for Women
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Engineering			
March/April	Materials technology in constructive methods in civil engg.	Bangalore	Indian Institute of Science
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Home Science			
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Language & Literature			
16—18 March	Seminar on modern period of Hindi Literature	Delhi	School of Correspondence Courses, University of Delhi
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3—24 May	Short term institute in linguistics	Kurukshetra	Kurukshetra University
Law			
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Life Sciences			
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Medicine & Public Health			
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26—31 March	Pillar extraction in thick seams	Dhanbad	Indian School of Mines
End of March 1979	Round table conference on transfer of technology in mineral industry in developing countries	Delhi	Institution of Engineers
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28 May—17 June	Summer Institute in Modern political analysis	Aurangabad	Marathwada University
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Psychology			
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Public Administration			
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Science & Technology			
March 1979	Experimental techniques in Fluid mechanics	Bangalore	Indian Institute of Science
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16—17 March	Seminar on development of the theatre in the 20th century	Calcutta	Rabindra Bharati University
Transport & Communication			
April 1979	Seminar/Workshop on aircraft, airworthiness & air safety	Delhi	Institution of Engineers

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Linkage with Environment

(Continued from page 149)

become alive to the services which they may expect from higher education by taking initiatives and formulating specific requests for services. Such intimate involvement will enable the higher education institutions themselves to take full account of the community's needs. There are even grounds for hoping that, for higher education as for the educational system as a whole, the various sectors of the population concerned and the different categories of users of higher education will be associated in the reorientation and reform of educational level and in the designing of curricula which will meet their expectations and concerns.

While it is difficult to give a valid definition of the university service, it can fairly be said that the institution of programmes of this kind entails a number of preconditions. Firstly, that students—and possibly the university teaching staff also—must have a proper job which they combine with their academic activities. Secondly, that the period of a service, be it continuous or intermittent, must be sufficiently lengthy to have an appreciable impact both on the students and on the community. An effort has been made in the National Service Scheme to involve students and teachers in a continuous manner—both during the term time and during vacation. The experience so far suggests that such activities have an extremely beneficial effect upon students and their

educational value constitutes no less important an element than their contribution to social development. NSS activities provide the students and teachers a contact with different aspects of social and professional life and thereby supply practical opportunities for vocational guidance. At the same time they help to develop sense of service, of responsibility, and the various qualities of character which would enable students to play an effective role as the agents of social progress and economic development.

The National Adult Education Programme recently launched by the National Government and the various State Governments, in the country provides yet another opportunity for teachers and students to help the community around institutions of higher learning. The main focus of NAEP is on the deprived sections of the society—those living below the poverty line—those belonging to Scheduled Castes and Scheduled Tribes and women. The response from several institutions of higher learning in the country has been very encouraging. Even during the initial few months of the launching of NAEP nearly 600 colleges have indicated their positive interest in the programme. As we go a long, it is hoped that more colleges and universities will come forward to assist in the implementation of this massive educational programme which is intended to liberate the poor and the oppressed and to change the socio-economic pattern of the nation. □

A list of Doctoral Theses Accepted by Indian Universities

PHYSICAL SCIENCES

Mathematics

1. Ashok Kumar. Composition of operators on $L^p(\lambda)$. University of Jammu.
2. Virkar, Kishor Vasudeo. Relativistic elastic systems. Shivaji University.

Statistics

1. Jani, B.B. Profit maximisation and deterioration problems in certain inventory models. Gujarat University.
2. Patel, Hasmukhbhai Chaturbhai. Some problems in sampling. M.S. University of Baroda.

Physics

1. Adeel Ahmad. Studies on bioacoustics and aerodynamics of fliers. Osmania University.
2. Chakrabarti, Bikaskanta. Some features of spin-phonon interaction in magnetic transitions. University of Calcutta.
3. Damle, Jayant Prabhakar. Study of thermal boundary layers: An experimental approach with the help of non-uniform electric fields. Nagpur University.
4. Gopinath, C.R. Molecular force fields of some compounds of sulphur and selenium. Bangalore University.
5. Gupta, Apurba. A study of the lower ionosphere at Ahmedabad. Gujarat University.
6. Gupta, Chander Sheikhar. Physico-chemical, thermal and mechanical studies of some clays. University of Jammu.
7. Gupta, Man Mohan. Investigations in the even wave harmonic oscillator theory of baryonic states: Photo-couplings, pionic photo-couplings, pionic photoproduction and structure functions with "Mixed" nucleon. University of Delhi.
8. Quamara, J.K. Study of optical properties in magneto electrets of transparent plastics. Bhopal University.
9. Sarkar, P.K. A study of Monte Carlo radiation transport calculations. Gujarat University.
10. Sawant, H.S. Studies in solar, terrestrial physics. Gujarat University.
11. Sinha, Uma Shankar. Study of diffuse X-ray reflections from crystals and determination of elastic constants [$\text{NH}_4\text{H}_2\text{PO}_4$, KH_2PO_4 & $(\text{NH}_4)_2\text{SO}_4$]. University of Bihar.

Chemistry

1. Ashwani Kumar. Synthetic studies in isopentenyl and cinnamyl derivatives of 4-methyl-coumarins, resacetophenone, and isoflavones. Himachal Pradesh University.
2. Babu, Thalasila Bose. Some studies on the species and analytical applications of molybdenum (iii) in aqueous medium. Andhra University.
3. Bhatt, Aruna. Ion exchange studies of some carboxylic acids of natural occurrence in aqueous and ethanolic systems. Jiwaji University.
4. Desai, H.G. Studies on various parameters of corrosion inhibitors. Gujarat University.
5. Eswaran, V. Studies on some quinonoid pigments. Madurai Kamaraj University.
6. Ganeshpure, Pralhad Ambadas. Synthetic routes to the $\text{C}_6\text{-C}_8\text{-C}_{10}\text{-C}_{12}$ system of lignans. Nagpur University.
7. Jain, Vinod Kumar. Preparation and characterisation of some mono and bis cyclopentadienyl and methylcyclopentadienyl titanium (IV) and zirconium (IV) compounds. University of Delhi.
8. Joshi, B.C. Studies in humic acids: Electrochemical properties and synthesis of humic materials (Gujarat soils). Gujarat University.
9. Khazanchi, Rajesh. Synthetic studies in naturally occurring acetylchromenes, flavones, 2-methyliso-flavones and related compounds. Himachal Pradesh University.
10. Manimaran, T. Synthesis of coumarins, thiocoumarins and carbostyrils. University of Madras.

11. Modi, R.M. Studies in corrosion of aluminium in alkaline media. Gujarat University.

12. Patel, Premananda. Some physico-chemical aspects of cation exchange (calcium-copper) in hydroxylapatite. Sambalpur University.

13. Prasad, Kommuri Mohana Murali Krishna. Some analytical aspects of aline dyes. Andhra University.

14. Raychaudhury, Tapan Kumar. Phytochemical studies on the medicinal plants of India. University of Calcutta.

15. Subrahmanya Sarma, M.V.V.S.S. Chemistry of transition elements: Studies in electrochemical reduction of vanadate. Sri Venkateswara University.

16. Viswanatha Sarma, Gorti. New developments in the analytical chemistry of antimony III. Andhra University.

Earth Sciences

1. Southanou, Sychanthavong. Studies in the precambrian rocks arounds Posina and Kherod in North Gujarat. M.S. University of Baroda.

Engineering & Technology

1. Devotta, Sukumar. Studies in transport phenomena hydrodynamics of drop formation and heat transfer across liquid-liquid interface during formation and rise of drops. University of Madras.
2. Jagadish, K. Kinetics of esterification of isobutyl alcohol with palmitic acid in a batch reactor, using para-toluene sulphonic acid and ZEO-Karb 225 resin catalysts. Kakatiya University.
3. Jayarami Reddy, P. Optimal operation of reservoirs system in Godavari Basin. Kakatiya University.
4. Puthal, Bhagabat. Optimal control of parallel AC-DC power systems. Sambalpur University.

BIOLOGICAL SCIENCES

Microbiology

1. Dandekar, Satyaprabha. Regulation of carotenogenesis in *Blakeslea trispora*. M.S. University of Baroda.

Marine Biology

1. Gopinatha Menon, N. Studies on the biology and fishery of the giant marine cat fish. *Tachysurus* (Ruppell). University of Cochin.

Botany

1. Badami, Ashok R. Histopathological aspects of Fusarium wilt syndrome in cotton. University of Madras.
2. Chandrashekara, K.V. Studies on coprophilous fungi. University of Madras.
3. Das, Suresh Chandra. Endogenous factors responsible for dormancy in the tea bush with particular reference to environmental conditions in North East India. Gauhati University.
4. Gabriel, Simon M.S. Studies on the members of the family rivulariaceae and scytonemataceae (Blue-Green algae). University of Madras.
5. Kak, Shiban Nath. Induced mutagenesis in some of the species of genus *Mentha*. University of Jammu.
6. Koduru, Prasad Ramakrishna. Cytogenetic studies on spontaneous mutant phenotypes of *Pennisetum americanum* (L) Leeke. Andhra University.
7. Megha, B.M. Metabolic aspects of growth and differentiation in plants. Gujarat University.
8. Saikia, Nilofer Rahman. On the production of hyperfragments in 1.8 GeV/CK interactions. Gauhati University.
9. Sharma, Banwari Lal. Phytopathological studies on storage diseases of potatoes. Jiwaji University.
10. Sukhadani, Asha Narayan. Embryology of some tu biflorae. Nagpur University.

Zoology

1. Baskar, S. Mechanism of low zone tolerance to sheep erythrocytes in the lizard, *Versicolor*. Madurai Kamaraj University.
2. Dinesh Chandra. Soluble esterases in the tissues of *Prodenia litura* Fabricius. University of Bihar.
3. Joshi, Madhu. Absorption of cholesterol in certain insects with special reference to *Periplaneta americana* L. University of Delhi.
4. Lalita Devi, S. Biology, ecology and ethology of the pea-crab, *Pinnotheires placenae* (Southwell & Harnell). Andhra University.
5. Nath, Panchanan. Experimental studies on endocrine regulation of vitellogenesis in the catfish, *Heteropneustes fossilis* (Bloch). University of Delhi.
6. Pandya, Arvindkumar Prabhulal. A survey of genus *Phlebotomus* and its ecology, its breeding in captivity, its ectoparasites, feeding habits and resistance to insecticides in Gujarat. M.S. University of Baroda.
7. Ramanaiah, G.V. Aspects of neuroendocrine control of metabolism in the slug, *Laevicaulis alte*. Sri Venkatswara University.
8. Seshagiri Rao, Buddhiraju Venkata. Systematic studies on three genera of clupeoid fishes from Indian waters and biometric comparison of stocks of three species from two localities. Andhra University.
9. Veerabhadra Sharma, Giriraju. Taxonomic studies on the fresh water cat fishes of Guntur District in Andhra Pradesh and some aspects of the biology of *Mystus cavarius* (Hamilton, Buchanan, 1822). Andhra University.

Medical Sciences

1. Basu, Jayasri. Effects of administration of L-lysine or L-threonine on ascorbic acid metabolism. University of Calcutta.
2. Dhariwal, Kuldeep Raj. Studies on lipid metabolism of mycobacteria. University of Delhi.
3. Manimekalai, S. Influence of hormones on reproductive tissues and liver. University of Madras.
4. Mathangi, Karimphat. A study of anatomy, physiology, pathology of velo-pharyngeal incompetence and its management in plastic surgery. University of Madras.
5. Simon, Johanna. Biochemical changes in tissues in experimental atherosclerosis: A study on the effect of kanthasindhooram and clofibrate. University of Madras.

Agriculture

1. Anjaneyulu, Valam Ram. Intercropping of hybrid bajra *Pennisetum typhoides* (Burm. F) Stapf & C.E. Hubb with mung, *Vigna radiata* (L.) Wilczek under rainfed conditions. Indian Agricultural Research Institute, Delhi.
2. Attar Singh. Response of short duration pigeon pea, *Cajanus cajan* (L.) Millsp varieties to varying row spacings and phosphorus levels under rainfed conditions. Indian Agricultural Research Institute, Delhi.
3. Bagde, Tularam Raghunath. Chemical regulation of ripening, yield and quality of phalsa, *Grewia subinaequalis* L. Indian Agricultural Research Institute, Delhi.
4. Bhat, M. Gopalakrishna. A study on inheritance of hairiness and other plant characters associated with jassid, *Amrasca devastans* Dist., resistance in cotton, *Gossypium hirsutum* L. Indian Agricultural Research Institute, Delhi.
5. Bhattacharyya, Basanta Kumar. Some contributions to the theory of non-sampling errors. Indian Agricultural Research Institute, Delhi.
6. Bhonde, Satishkumar Ruprao. Chemical regulation of sex expression in cucurbits. Indian Agricultural Research Institute, Delhi.
7. Butchi Raju, D. Genetical studies in *Cicer arietinum* L with special reference to performance in mixtures. Indian Agricultural Research Institute, Delhi.
8. Chaudhary, Santosh Kumar. Environmental influence and heterosis exploitation in sunflower, *Helianthus annuus* L. Indian Agricultural Research Institute, Delhi.
9. Choudhury, Ajoy Kumar. Effect of soil and nitrogen management on the growth and yield of transplanted rice. Indian Agricultural Research Institute, Delhi.

10. Desh Raj. Studies on the control of mustard aphid, *Lipaphis erysimi* Kaltendbach with special reference to the utilization of natural enemies. Indian Agricultural Research Institute, Delhi.
11. Duara, Pradeep Kumar. Evaluation of actual and mechanical diallels developed from heterozygous maize, *Zea mays* L. populations. Indian Agricultural Research Institute, Delhi.
12. Dwarika Prasad. Studies on 1, 2-dibromo-3-chloropropane in relation to its diffusion, persistence in soil and uptake by plants. Indian Agricultural Research Institute, Delhi.
13. Girdhari Lal. Studies on the basis of resistance in maize and sorghum to *Chile partellus* (Swinhoe). Indian Agricultural Research Institute, Delhi.
14. Gupta, Krishna Kumari. Effect of salinity on lipid components of gram, *Cicer arietinum* L. Haryana Agricultural University.
15. Hampaiha, R. Studies on the utilisation of phosphorus by crop plant in cereal-cereal and legume-cereal rotations by tracer methodology. Indian Agricultural Research Institute, Delhi.
16. Hanslas, Vijay Kumar. Studies on induced mutations in peas, *Pisum sativum* for quantity and quality of protein. Indian Agricultural Research Institute, Delhi.
17. Hira Lal. Effect of some physiologically active organic wastes on soil fertility and plant growth. Indian Agricultural Research Institute, Delhi.
18. Hooda, Randhir Singh. A comparative study of progeny performance of certain sugarcane crosses. Haryana Agricultural University.
19. Jagat Ram. Genetic analysis of infectivity and effectivity of *Rhizobium leguminosarum*. Indian Agricultural Research Institute, Delhi.
20. Jain, Paras Mal. Studies on the effect of mulch, antitranspirant and fertilizer application on water use, nutrient uptake and yield of the crops under rainfed conditions. Indian Agricultural Research Institute, Delhi.
21. Kale, Pandurang Narsingrao. Studies on F_1 hybrids and synthetics in Indian cauliflower, *Brassica oleracea* L var botrytis L. Indian Agricultural Research Institute, Delhi.
22. Kartar Singh. A study of neo-marginal farmer's farming situations and socio-economic impact of new agricultural technology. Indian Agricultural Research Institute, Delhi.
23. Kaura, Dilip Kumar. Development, textual and format criteria for an effective Hindi farm magazine. Indian Agricultural Research Institute, Delhi.
24. Kishore, Deep Kumar. Physiological studies on salt tolerance in grapes cv. perlette. Indian Agricultural Research Institute, Delhi.
25. Madankumar, Nara. One dimensional models for prediction of accumulation and leaching of salts in two texturally different soils. Haryana Agricultural University.
26. Manchanda, Manohar Lal. Pedogenic characterization of salt-impregnated soils of a part of Haryana. Haryana Agricultural University.
27. Mishra, Saryu Prasad. A study of farm entrepreneurship in a backward district of Bihar. Indian Agricultural Research Institute, Delhi.
28. Mishra, Sharda Prasad. Selection for heterosis and combining ability in grain sorghum, *Sorghum bicolor* L. Moench. Indian Agricultural Research Institute, Delhi.
29. Nagarajan, Shantha. A study of cell water for elucidating the mechanism of thermal resistance of crop plant, wheat. Indian Agricultural Research Institute, Delhi.
30. Narayankhedkar, Shankar Gunderao. Genetic and environmental factors in dairy sire evaluation. Haryana Agricultural University.
31. Om Dutt. Effect of high doses of nitrogen and phosphorus in long term to 'wheat-bajra' rotation on soil physical properties. Indian Agricultural Research Institute, Delhi.
32. Pawar, Jagannathrao Rau. Changes in resource use structure, resource productivities and allocation efficiency on farms in Maharashtra. Mahatma Phule Krishi Vidyapeeth.

33. Phukan, Paramanada. Taxonomic studies of plant parasitic and free-living nematodes from Assam. Indian Agricultural Research Institute, Delhi.
34. Prasad, Shankar. Studies on the interrelationship of nitrogen and irrigation in spring tomato. Indian Agricultural Research Institute, Delhi.
35. Raghu Mohan, N.G. Morpho-genesis, classification and utilization of soils of Goa. Indian Agricultural Research Institute, Delhi.
36. Ray, Ajit Kumar. Optimization of resource use in irrigated farms of Hooghly District: An application of linear programming techniques. Indian Agricultural Research Institute, Delhi.
37. Sadamate, Vishwanath Vishnu. A study of tribal farming system and technological gaps. Indian Agricultural Research Institute, Delhi.
38. Saha, Satya Narayan. Physiological analysis of growth, flowering and yield potential in *Sesamum indicum* L. Indian Agricultural Research Institute, Delhi.
39. Saikia, Upendra Nath. Hyphomycetes of Assam and adjacent areas. Indian Agricultural Research Institute, Delhi.
40. Sarkar, Dipak. Some factors affecting direct use of low grade Mussoorie rockphosphate. Indian Agricultural Research Institute, Delhi.
41. Sarode, Shivaji Vyankatrao. Residues and residual toxicity of phorate, fenitrothion, BHC and lindane on bhindi and cauliflower. Indian Agricultural Research Institute, Delhi.
42. Saxena, Jageshwar Dayal. Studies on the effect of gamma radiation on a phosphine resistant strain of *Tribolium castaneum* (Herbst). Indian Agricultural Research Institute, Delhi.
43. Sham Singh. Biometrical analysis to predict the breeding potential in a cross of 'Upland' cotton, *Gossypium hirsutum* L. Punjab Agricultural University.
44. Shanti Sarup. Studies on some aspects of anaplasmosis with special reference to its serology and immunology. Haryana Agricultural University.
45. Singh, Chandra Shekhar. Nodulation study with indigenous varieties of soybean. Indian Agricultural Research Institute, Delhi.
46. Sisodia, Bhupendra Veer Singh. On preliminary test estimation procedures and bias in repeated surveys. Indian Agricultural Research Institute, Delhi.
47. Srivastava, Mahendra Lal. Studies on the family muscidae (Phaoniinae) with special reference to shoot flies. Indian Agricultural Research Institute, Delhi.
48. Surve, Dinkarrao Nilkanthrao. Studies on soil moisture stress in relation to growth, yield, quality and water use efficiency of field peas. Indian Agricultural Research Institute, Delhi.
49. Talwar, Shankar Narayan. Evaluation of some tetraploid *Triticum* species for yield and its components. Indian Agricultural Research Institute, Delhi.
50. Varma, Narendra Swaroop. Genetics of yield and some quality characters in barley. Indian Agricultural Research Institute, Delhi.
51. Venkata Rao, C. Combining ability and adaptation analysis in pearl millet, *Pennisetum typhoides* (Burm) S & H. Punjab Agricultural University.
52. Vinod Kumar. Availability of sulphur to plants as affected by sulphur, phosphorus, zinc and molybdenum application. Haryana Agricultural University.
53. Virendra Pal Singh. Genetics of seed characters and their association with components of ball weight in *Gossypium hirsutum* L. Indian Agricultural Research Institute, Delhi.

Additions to AIU Library

- Agrell, Tina. *Recruitment techniques for modern managers*. Willingborough Thorsons (c 1977) 127p.
- Alamgir, Mohiuddin. *Long term dynamic model for planning the manpower and educational system of Bangladesh*. Dacca, Bangladesh Institute of Development Economics, 1973. 210p.
- Association of Indian Universities, Delhi. *Bibliography of doctoral dissertations 1975-76: Natural and Applied Sciences*. Delhi, Author, 1978. xxxiv, 575p.
- Question bank book series phase II: 21 Foods and nutrition. Delhi, Author (c 1978) 258p.
- Association of Southeast Asian Institutions of Higher Learning, Bangkok. *Proceedings of symposium on appropriate technology*. Bangkok, Author, 1977. 198p.
- Role of women in development. Bangkok Author, 1976. 261p.
- Seminar on extra-curricular programmes in universities, Kuala Lumpur, 1973: *Proceedings*. Kuala Lumpur, Author, 1973. vi, 145p.
- Teaching of languages in institutions of higher learning in Southeast Asia. Bangkok, Author, 1975. xxiv, 213p.
- Australian Vice-Chancellors' Committee, Canberra. *Conferences and congresses—fees payable by staff*. Canberra, Author, 1978. 24p.
- Limited term appointments: Academic staff. Canberra, Author, 1978. 19p.
- University bookshops. Canberra, Author, 1977. 11p.
- University seal. Canberra, Author, 1978. 8p.
- Bose, Ashish etc., ed. *Population statistics in India*. Delhi, Vikas, 1977. xviii, 445p.
- Botti, M. and others. *Basic education in the SAHEL countries*. Hamburg, Unesco Institute for Education, 1978. 130p.
- Commission on Canadian Studies, 1972. *Symons report*. Toronto, Book and Periodical Development Council (c 1978). 205p.
- Conference of University Administrators, Group on Forecasting and University Expansion, (Chairman: M.L. Shattock). *Interim report 1977*. Glasgow, CUA, 1977. 62p.
- Curtis, Bernard and Mays, Wolfe, ed. *Phenomenology and education: Self-consciousness and its development*. London, Methuen (c 1978) xxvi, 150p.
- Educational Facilities Laboratories, New York. *Campus in transition: A report from EFL*. New York, Author, 1975. 76p.
- Neglected majority: Facilities for commuting students. New York, Author, 1977. 76p.
- Space casting: Who should pay for the use of college space? New York, Author, 1977. 47p.
- Fink, Arlene and Kosecoff, Jacqueline. *Evaluation primer*. Washington, Capitol (c 1978), xi, 97p.
- Fogel, Barbara R. *Design for change: Higher education the service of developing countries*. New York, International Council for Educational Development, 1977. ii, 71p.
- International Association of Universities, Paris. *6th general conference, Moscow, 1975: report*. Paris, Author, 1975. 309p.
- Joshi, Kireet. *Education for personality development: Two lectures*. Delhi, NCERT, 1976. 37p.
- Karnataka. Committee on the University of Mysore (Chairman: B Venkataswami) (1977). *Report of the One-Man Committee constituted to inquire into certain allegations concerning the affairs of the University of Mysore*. Bangalore Government Press, 1976. 130p.
- National Seminar on Correspondence Education, Patiala, 1976. *Report*. Delhi, Indian University Association for Continuing Education, 1976. vi, 154p.
- Nuffield Foundation, Group for Research and Innovation in Higher Education. *Course teams—four case-studies and a commentary: A report*. London, Author, 1975. discontd.
- Sharma, G.D. Resource allocation on education: *An inter, intra-country and inter-temporal pattern analysis*. Delhi, Association of Indian Universities (c 1978) 159p.
- Syed Ameer Ali. *Islamic history and culture*. Delhi, Amar Prakashan, 1978. 230p.
- Vivian, S. *Handbook on in-service teacher training in developing countries of the Commonwealth*. London, Commonwealth Secretariat, 1977. 116p.

INDIAN INSTITUTE OF TECHNOLOGY, BOMBAY

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Good Bachelor's degree of a recognised University plus degree/diploma in Library Science. Master's degree in Library Science preferable. 7 years' experience in a responsible capacity in a University level Library. Should be well conversant with the day to day working of the Library and Documentation & Information, Book Bank, Special Collections, Readers' Assistance & Providing help in General Library Administration, Maintenance of Reprography Unit & Binding, Collections of Technical Reports, Standard and Patent Specifications, Exchange etc.

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"Should have passed 8th class examination from the Government recognised school with an experience of working in Animal House".

TECHNICAL ASSISTANT (Botany) for 1st Post

Graduate in Science (with experience of having handled instruments commonly used in the bio-chemical laboratory.) For 2nd post

B.Sc. or Matric with Science subjects and Diploma in Refrigeration with at least two years' experience.

LABORATORY ATTENDANT (Botany)

Should have passed the Matriculation or an equivalent Examination with Science subjects.

SPECIAL/DESIRABLE QUALIFICATIONS FOR

Professorship in Political Science

International Politics OR comparative Politics & Public Administration.

Readership in Management Studies

Candidates with Master's degree in Business Management Engineering, Technology, Mathematics or other field of Social Sciences such as Economics, Commerce, Psychology, Sociology etc. with specialisation in Management Policy and Corporate Planning or Management Concepts or Administrative Science will be given preference.

Candidates with experience of teaching post-graduate classes or with consultancy/practical executive experience in a business or an industrial organisation will be given preference. Familiarity with the case method of instruction, advanced training in modern methods of teaching and experience of conducting executive development programmes are desirable.

Lectureship in Law

Teaching experience or specialization in Administrative Law, Mercantile Law, Law of Contracts, Public Control of Business, Jurisprudence, Law and Poverty, Military Law or Law of Taxation.

Readerships in Botany

Training & experience of research in interdisciplinary.

TECHNICAL ASSISTANT (Botany) 1st post

Experience in Laboratory Techniques of the subject (Botany).

READERSHIP IN GEOGRAPHY

Specialisation in any branch of Human or Economic Geography.

LABORATORY ATTENDANT

Should have worked in a Laboratory.

The prescribed application form can be had from the Information Office of the University either personally or by sending a self-addressed envelope (size 5" x 11") with postage stamps worth Rs 2.80.

Selected candidates will have to produce the original documents relating to their age, qualifications, experience etc. at the time of interview.

Applications (separate for each post) accompanied by attested copies of Degrees other certificates, marksheets, published research articles, etc. should reach the undersigned not later than 4th April, 1979.

Note : 1. It will be open to the University to consider the names of suitable candidates who may not have applied in respect of teaching posts. Relaxation of any of the qualifications may be made in exceptional cases, in respect of all teaching posts on the recommendations of the Selection Committee.

2. Canvassing in any form by or on behalf of the candidates will disqualify.

3. Candidates from outside Delhi for teaching posts called for interview, will be paid one second class Rail fair each way from the place of their residence or from the place as mentioned in their application whichever is shorter.

REGISTRAR

MADURAI KAMARAJ UNIVERSITY
MADURAI-625021

Notification No. 2/V/Advt/79

Applications in the prescribed form are invited for the post of one Reader in Islamic Tamil Literature in the University.

Scale of Pay

Rs. 1200-50-1300-60-1900.

General Qualifications

M.A. in Tamil with first or high second class, with Ph.D. in Tamil and research publications of recognised merit on Islamic Literature in Tamil. Minimum teaching experience of 5 years at the Collegiate level or equivalent research experience. Candidates without Ph.D. but with recognised research record in Islamic Tamil Literature will be considered for appointment. Knowledge of Arabic and another Indian language preferable.

Appointment of persons on deputation will also be considered, if the candidates are found suitable and the employer is agreeable to spare the services.

The Prescribed form of application and full details regarding qualifications and experience required can be got from the undersigned on requisition, accompanied by 1) a self-addressed envelope with postage stamps to the value of Re. 1/- affixed thereon and 2) State Bank of India challan for Rs. 5/- (Account No. 1) or Demand Draft for Rs. 5/- payable at Madurai drawn in favour of the Registrar, Madurai Kamaraj University, Madurai-625021.

The last date for receipt of requisitions for the prescribed form of applications is 20th March 1979 and the last date for receipt of filled in applications is 26th March 1979. Applications received after the due date will not be considered.

B. Murugan
REGISTRAR

THE UNIVERSITY OF
BURDWAN

RAJBATI : BURDWAN
WEST BENGAL

Advertisement No. 12/78-79
Dated 6th March, 1979

Applications in the prescribed form are invited for the following posts in the approved scales of pay (viz. Lecturer—Rs. 700-40-1100-50-1600) with allowances and other benefits according to University Rules.

A. Department of History

(i) Lecturer : One post

B. Department of Mathematics

(i) Lecturer in Statistics : One post

C. Department of Geography

(i) Lecturer : Three posts.

MINIMUM QUALIFICATIONS

(a) A Doctor's Degree or published research work of an equally high standard and

(b) Consistently good academic record with first or high second class (B in the seven point scale) Master's Degree in the relevant subjects or an equivalent degree of a foreign University.

DESIRABLE QUALIFICATION
SPECIALISATION OR
PROFICIENCY

For A : Any Branch of the subject

For B : Mathematical Statistics/Multivariate Analysis/Econometrics/Industrial Statistics/Bio-statistics

For C : (i) One post with specialisation in Economic Geography
(ii) One post with specialisation in Cartography/Meteorology/Geomorphology
(iii) One post with specialisation in Physical or Social branch subject

The University Council may, on recommendation of the appropriate Selection Committee, waive any of the requirements in view of the candidate's specialised knowledge in the subject. The choice of the Committee may not necessarily be confined to those who

apply formally. Those who applied earlier for the posts under "C" need not apply again.

For application form and other information apply to the Registrar with a self-addressed stamped (0.40p.) envelope (9" x 4").

Last date for submission of applications with the requisite fee of Rs. 5/- is March 24, 1979.

A.K. Chaudhuri
REGISTRAR

DIBRUGARH UNIVERSITY

DIBRUGARH—ASSAM

Advertisement No. 2/79

Applications are invited for the following posts :

1. Professor in English—One post
2. Professor in History—One post
3. Reader in Applied Geology—Three posts
4. Reader in Statistics—Two posts
5. Reader in Life Sciences—Two posts
6. Reader in Economics—One post
7. Reader in Commerce—One post
8. Reader in Political Science—One post
9. Reader in Education—One post
10. Lecturer in Mathematics—Three posts
11. Lecturer in Chemistry—One post
12. Lecturer in Physics—Two posts
13. Lecturer in Commerce—One post
14. Lecturer in Life Sciences—Two posts
15. Lecturer in Political Science—One post
16. Lecturer in English—One post (For the Department of Education.)
17. Lecturer in Applied Geology—Two posts

Scale of Pay

Professor : Rs. 1500-60-1800-100-2000-125/2-2500/- (Revised)
Reader : Rs. 1200-50-1300-60-1900/- (Revised).
Lecturer : Rs. 700-40-1100-50-1600/- (Revised).

All posts carry usual allowances admissible under the University rules in force from time to time and the incumbents will be eligible for Contributory Provident Fund and Gratuity on confirmation as per rules of the University.

Essential Qualifications

A. For Professor

An eminent scholar with published work of high quality actively engaged in research, ten years' experience of teaching and/or research experience of guiding research at doctoral level.

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge.

B. For Reader

Good academic record with a doctoral degree or equivalent published work. Evidence of being actively engaged in (i) research (ii) innovation in teaching methods or (iii) production of teaching materials.

At least five years experience of teaching and/or research provided that

at least three of these years were as Lecturer or in equivalent position.

C. For Lecturer

(a) A Doctorate Degree or research work of an equally high standard; and

(b) Consistently good academic record with 1st or high 2nd class (B in the seven point scale) Master's Degree in a relevant subject or an equivalent degree of a foreign University (Consistently good academic record with an M.Phil Degree in Education in case of Lecturer in Education). Having regard to the need for developing interdisciplinary programmes, the degrees in (a) and (b) above may be in relevant subject.

Provided that if the Selection Committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard, it may relax any of qualifications prescribed in (b) above.

Provided further that if a candidate possessing a Doctor's degree or equivalent research work is not available or is not considered suitable a person possessing a consistently good academic record (weightage being given to M.Phil. or equivalent degree or research work of quality) may be appointed provided he has done research work for at least two years or has practical experience in a research laboratory/organisation on the conditions that he will have to obtain a Doctor's degree or give evidence of research work of equivalent high standard within five years of his appointment, failing which he will not be able to earn future increments until he fulfils those requirements.

Specialisation required

For the post of Reader in Applied Geology

Specialisation in any applied branches of geology (e.g. Hydrogeology, Petroleum Geology, Geological Prospecting, Geophysical Prospecting, Geochemical Prospecting, Engineering Geology, Mining Geology, Mineral Technology, Mineral Economics etc.) Preferably with industrial and/or field experience.

4. For the post of Reader in Statistics

Post No. 1: Econometrics/Demography/Educational Statistics/Information Theory.

Post No. 2: Stochastic Processes/Statistical Inference/Experimental Design/Sample Survey.

5. For the post of Reader in Life Sciences

Specialisation in M.Sc. level—Botany, Zoology, Biology, Life Sciences.

Specialisation preferable—Biochemistry, Physiology, Pathology, Microbiology, Parasitology.

6. For the post of Reader in Economics

Industrial Economics of Education.

7. For the post of Reader in Commerce

Business Statistics & Advanced Accountancy.

OR

Business Statistics & Public Finance and Fiscal Policy.

8. For the post of Reader in Political Science

—Open. However preference would be given to candidates having specialisation in Political Theory/or Public Administration.

9. For the post of Reader in Education

M.Ed. or M.A. in Education with B.T./B.Ed.

10. For the post of Lecturer in Mathematics

- (1) Specialisation in Elasticity of Fluid Mechanics (for the permanent post)
- (2) Specialisation in Numerical Analysis or Computer Programming (for the leave vacancy).
- (3) Specialisation in Abstract Algebra or Functional Analysis or Differential Topology (for the leave vacancy).

11. For the post of Lecturer in Chemistry

Organic Chemistry.

12. For the post of Lecturer in Physics

No specialisation is needed.

13. For the post of Lecturer in Commerce

Business Statistics & Monetary and Banking Policy.

OR

Business Statistics.

&

Law & Practice of Direct Taxes.

14. For the post of Lecturer in Life Sciences.

Specialisation at M.Sc. level—Botany, Zoology, Biology, Life Sciences.

Preferable specialisation—Genetics, Endocrinology, Entomology.

15. For the post of Lecturer in Political Science

Government and Politics in India.

16. For the post of Lecturer in English (Deptt. of Education)

(a) English language teaching with training in teaching English as a foreign language in any Institute/Centre of foreign language.

(b) Preferably with B.T./B.Ed. or M.Ed.

17. For the post of Lecturer in Applied Geology

Specialisation in any applied branches of geology (e.g. Stratigraphy, Structure and Tectonics, Geological Mapping, Economic Geology, Geological Prospecting, Geochemical Prospecting, Engineering Geology, Mining Geology, Mineral Technology, Mineral Economics, Hydrogeology Petroleum Geology, etc. preferably with industrial and/or field experience.

Nine copies of applications for a post of professor and seven copies of applications for a post of Reader or Lecturer in plain papers giving full bio-data including (1) Name in full (in block letters); (2) Father's name; (3) Date of birth; (4) (a) Permanent address (b) Present address (5) Present occupation, if any, including name of employer; (6) Present salary drawn (if any); (7) Detailed academic career from Matriculation/Higher Secondary/High School Leaving Certificate

Examination and onwards showing division/class, aggregate percentage of marks, school/college/University from which appeared (attested copies of Marksheets, Certificates should be enclosed); (8) Details of appointments held with designation, duration, nature of works and name of employers; (9) Research contributions with copies/reprints; (10) Name and address of two referees not related to the candidate together with an application fee of Rs. 5/- (Rupees five) by CROSSED INDIAN POSTAL ORDER drawn in favour of the Registrar, Dibrugarh University, should be sent in an inner sealed cover superscribed "Application for the post of (Name of the post applied for), Advertisement No. 2/79 enclosed in an outer cover addressed to the Registrar (Offg.), Dibrugarh University, Dibrugarh to reach him not later than 7.4.1979.

The number of this advertisement and name of the post applied for must be referred to in the application. Persons in employment should apply through proper channel or with a no objection certificate from the present employer. All reprints of the research papers published must be attached. Those who had already applied need not apply again.

Applications not in conformity with the above requirements will not be entertained.

Candidates will be required to appear at an interview if and when called for. Candidates called for interview for the post of Professor and Reader will be given actual Railway fare according to the rules of this University.

K. Sarma
REGISTRAR (Offg.)

ANDHRA UNIVERSITY

WALTAIR

Advertisement No. 1/79

Applications in the prescribed form are invited for the following posts so as to reach the Registrar, Andhra University, Waltair on or before 5.4.1979. Each application shall be accompanied by a crossed Indian Postal Order for Rs 10/- (Rupees ten only) or a Bank receipt remitting that amount in the State Bank of India to the credit of Andhra University General Account (Ordinary) towards the Registration fee for the application.

Department	Subject	Professor	Reader	Lecturer
1	2	3	4	5
1. Marine Sciences	Marine Ecology	—	1	—
2. Applied Mathematics		—	—	1 (Nuzvid)
3. Meteorology & Oceanography		—	1	—
4. Geology	Hydro-Geology	—	1 (Temp)	1
5. Pharmacy	Physics	—	—	1
6. Physics		—	—	1 (Nuzvid)
7. Economics	Monetary Economics	—	1	—
	Industrial Economics	—	—	1
8. Philosophy	Modern Logic or Phenomenological Analysis	—	1	—
9. Politics & Pub. Admn.		—	1 (Kakinada)	—
10. Cooperation & App. Economics	One in Growth Economics One in Rural Finance & Coop.	—	2+2 (Temp)	—
11. I.R.L.W.		—	1	—
12. Anthropology		—	1	—
13. Commerce		—	—	1 (Case Analyst)
14. Civil Engineering		—	1	4
15. Mechanical Engineering	Marine Engineering	1	2	2
	Industrial Engineering	1	—	—
16. Electrical Engineering	One in Tele communication	1+1 (Temp)	—	—
	One in Electronic Circuits.	—	2	—
	One in Electronic Devices	—	—	—

Note

The rule of reservation for Scheduled Castes/Scheduled Tribes/Backward Communities candidates is applicable for the posts of Lecturers.

SCALE OF PAY

Professor: Rs 1500-60-1800-100-2000-125/2-2500

Reader: Rs 1200-50-1300-60-1900

Lecturer: Rs 700-40-1100-50-1600

Case-Analyst: Rs 400-40-800-50-900 (Non D.A. merged Scale).

The details of qualifications prescribed in respect of each post including the particulars and precise branch of specialisation which is needed and also the preferential qualifications considered desirable will be furnished along with the application form.

Requisition for the application forms may be made to Sri M. Chakravarthi, Deputy Registrar, Andhra University, Waltair, accompanied by a self-addressed and stamped envelope and a State Bank of India challan or crossed Indian Postal Order for one Rupee. The University reserves the right to fill or not to fill all or any of the posts. The cover containing the applications should be superscribed as "APPLICATION FOR APPOINTMENT TO THE POST OF———". Applications received after the due date will not be entertained.

P. Hanumantha Rao
JOINT REGISTRAR

GAUHATI-UNIVERSITY

GAUHATI-781014

Advertisement No. 4 of '79

Applications are invited for the following posts:

1. Professor of Hindi — One post (5th Plan).
2. Professor of Zoology — One post (permanent).
3. Professor of Philosophy—One post (permanent).
4. Professor of Law—One post (5th Plan).
5. Reader in Commerce: Spl. open—One post (5th Plan).
6. Lecturer in Commerce—Two posts. Must be competent to teach Business Statistics and Business Administration/Business Environment.
7. Lecturer in Assamese—Specialisation: M.A. in Comparative Philology (Indo Aryan Group or M.A. in Sanskrit (Prakrit Group) or M.A. in Assamese (Language Group). Preference will be given to one who has specialisation in Middle Indo Aryan.

Scale of pay: Professor: Rs. 1500-60-1800-100-2000-125/2-2500.

Reader: Rs. 1200-50-1300-60-1900.

Lecturer: Rs. 700-40-1100-50-1600

All posts carry usual allowances admissible under the University rules in force from time to time.

In a case where specialisation has not been mentioned against post candidates should state their areas of specialisation at the Master's and Doctor's degree levels.

ESSENTIAL QUALIFICATION

Professor (Arts & Science)

An eminent scholar with published work of high quality actively engaged

in research. 10 (ten) years' experience of teaching and/or research. Experience of guiding research at doctoral level.

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge.

Professor (Law)

- (a) Consistently good academic record with first or High Second Class (B+) Master's degree in Law or any equivalent degree of a foreign University
- (b) Experience of 10 years' post-graduate or 15 (fifteen) years undergraduate teaching.
- (c) Experience in guiding and promoting research.

Preferential

A Doctor's Degree in Law or published work of an equally high standard.

READER

Good academic record with a doctoral degree or equivalent published work. Evidence of being actively engaged in (i) research or (ii) innovation in teaching methods or (iii) production of teaching materials.

About five years' experience of teaching and/or research provided that atleast three of these years were as Lecturer or in an equivalent position. This condition may be relaxed in the case of candidates with outstanding research work.

LECTURER

(a) A Doctor's degree or research work of an equally high standard and (b) Consistently good academic record with 1st or high Second Class (B in the seven point scale) Master's degree in a relevant subject or an equivalent degree of a foreign University. Having regard to the need for developing inter-disciplinary programmes, the degree in (a) and (b) above may be in relevant subjects.

Provided that if the Selection Committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard, it may relax any of qualifications prescribed in (b) above.

Provided further that if a candidate possessing a Doctor's degree or equivalent research work is not available or is not considered suitable, a person possessing a consistently good academic record (weightage being given to M.Phil or equivalent degree or research work of quality) may be appointed provided he has done research work for atleast two years or has practical experience in a research Laboratory/organisation on the condition that he will have to obtain a Doctor's degree or give evidence or research work of equivalent high standard within five years of his appointment, failing which he will not be able to earn future increments until he fulfils these requirements.

Candidates for being eligible for recruitment to the posts of Lecturers must have a first or high Second Class (B in the seven point scale) at the Master's level and for determining consistently good record, average of 50%, 55% may

be expected at the two examinations prior to the Master's examination.

Applications in plain paper in quadruplicate giving full bio data including (1) Name in full (in block letters). (2) Father's name (3) Date of birth by the christian era (4) (a) Permanent residence and address (in full), (b) present address (in full) (5) Present occupation if any and name of employer, (6) present salary drawn (if any) (7) Detailed academic career with marksheets and subjects studied (including Honours) in degree and post graduate courses from Matriculation/Higher Secondary/High School Leaving Certificate Examination onward and copies/reprints of research contributions, (8) Name and address of two referees not related to candidates together with an application fee of Rs. 10 (ten) (Rs. 7.50 in case of Scheduled Caste/Scheduled tribe candidates) by **CROSSED INDIAN POSTAL ORDER** drawn in favour of Gauhati University payable at the Gauhati-781014 post office should be sent in an inner sealed cover superscribed application for post of (name of post applied for) Advt. No. 4 of 1979 enclosed in an outer cover addressed to Dr. K.C. Battacharyya, M.A., Ph.D., Registrar, Gauhati University, Gauhati-781014 to reach him not later than **25th March 1979**. The number of this advertisement and name of the post applied for must be referred to in the application. Persons in employment should apply through proper channel or with a no-objection certificate from the present employer.

The University has accepted the principle of reservation of twenty posts for Scheduled Tribe and Scheduled Caste candidates according to the norms of the State Government. Candidates should submit necessary certificate from the Deputy Commissioner/District Magistrate if they belong to Scheduled Caste or Scheduled Tribe.

Candidates will be required to appear at an interview if and when called for.

Canvassing directly or indirectly will be a disqualification.

Candidates who had applied for the post of Lecturer in Commerce in response to Advt. No. 10 of 1978 need not apply again.

JAWAHARLAL NEHRU UNIVERSITY NEW DELHI-110067

Announcement of Faculty Positions at the Centre of Post Graduate Studies, IMPHAL.

Advt. No. Acad. III/4/79

The Centre of Post-Graduate Studies, Imphal, of the University has openings for faculty positions in the following disciplines/areas of specialization:

I. CHEMISTRY

1. Professor/Sr. Fellow—one (Chemistry of Natural Products)
2. Associate Professor/Fellow—one (Physical Chemistry)
3. Assistant Professor—one (Bio-Chemistry)

II. PHYSICS

4. Assistant Professor—one (Bio-Physics)

III. ENGLISH

5. Associate Professor/Fellow (English Language)—one (leave vacancy)
6. Assistant Professors—(English Language)
Two—leave vacancies:
(i) One in English language;
(ii) One in English literature in any two of the following:
(a) 20th Century Poetry & Drama
(b) American Literature
(c) Indian & Commonwealth Literature.

IV. MANIPURI LANGUAGE & LITERATURE

7. Associate Professor/Fellow—one (Manipuri Culture including dance & Music forms of the region)
8. Assistant Professor—one (leave vacancy) (Manipuri Language)

QUALIFICATIONS

Professor/Senior Fellow

1. Consistently good academic record with at least a high second class Master's degree in a relevant discipline or an equivalent qualification from an Indian/foreign University.
2. A doctor's degree or published work of an equally high standard; and
3. About ten years' experience of teaching and/or research.

Associate Professor/Fellow

1. Consistently good academic record with at least a high 2nd class Master's degree in a relevant discipline or its equivalent qualification from an Indian/foreign University.
2. A doctor's degree or published work of an equally high standard; and
3. About five years' experience of teaching and/or research.

Assistant Professor

1. Consistently good academic record with atleast a high 2nd Class Master's degree in a relevant discipline or its equivalent qualification from an Indian/foreign University; and
2. A doctor's degree or published work of an equally high standard.

Provided that if the Selection Committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard, it may relax any of the qualifications prescribed in (1) above.

Provided further that if a candidate possessing a Doctor's degree or equivalent research work is not available or is not considered suitable, a person possessing a consistently good academic record (weightage being given to M.Phil or equivalent degree or research work of quality) may be appointed provided he has done research work for at least two years or has practical experience in research laboratory/organisation on the

condition that he will have to obtain a Doctor's degree or give evidence of research work of equivalent high standard within five years of his appointment, failing which he will not be able to earn future increments until he fulfils these requirements.

SCALE OF PAY

Professor/Senior Fellow: Rs 1500-60-1800-100-2000-125/2-2500

Associate Professor/Fellow: Rs 1200-50-1300-60-1900

Assistant Professor: Rs 700-40-1100-50-1600

plus usual allowances as admissible to the members of the staff in the Central University.

Relaxation in any of the qualifications may be made (a) in favour of persons of eminence or of high academic professional distinction, and (b) in exceptional cases where adequately qualified persons are not available but are otherwise found suitable for the respective positions. It will also be open to the University to consider the names of suitable candidates who may not have applied.

The selected candidates will be expected to participate in the teaching and research programmes in the concerned disciplines in other Schools of the University as well as in the programmes offered in their own Centres of Studies.

Normally appointment of Fellows is made on contract basis for a period ranging from one to three years.

Benefits of C.P. Fund-cum-Gratuity/G.P. Fund-cum-Pension-cum-Gratuity are available as per University rules.

Persons already in employment should route their applications through proper channel.

Due consideration will be given to candidates belonging to SC/ST at the level of Assistant Professor.

Second class (mail) rail fare (both ways) will be paid to candidates invited to appear for interview from outstation by the shortest route subject to the production of rail receipt.

Applications, separate for each post, on the prescribed form, obtainable free of cost from the University by sending a self-addressed and stamped envelope of 23cm×10cm size to the DEPUTY REGISTRAR (ACADEMIC) JAWAHARLAL NEHRU UNIVERSITY, NEW MEHRAULI ROAD, NEW DELHI-110067, should reach him latest by 7th April 1979.

Candidates from abroad, applying for faculty positions, may apply on plain paper (but their applications should reach the University by the last date) furnishing all the relevant informations such as their names, date and place of birth, marital status, nationality, state of domicile, postal and permanent addresses; father's name and address, academic and professional attainments, full details of (a) publications, and (b) research projects undertaken, language (s) known; details of visits to foreign countries; and the name and addresses of at least two persons well acquainted with the candidate's professional work who should also be requested by the candidate to forward to the DEPUTY

REGISTRAR (ACADEMIC) confidential report concerning the candidate.

PUNJABI UNIVERSITY PATIALA

Advertisement No. 258/PRO/Estt/79

Applications are invited for the following posts :

1. Lecturer in Defence Studies—One (Rs. 700-40-1100-50-1600).

Qualifications

- (a) A Doctor's degree or research work of an equally high standard in the relevant subject; and
- (b) Consistently good academic record with 1st or high 2nd class (B in the seven point scale) Master's degree in a relevant subject or an equivalent degree of a foreign University.
- (c) Qualifications prescribed in (b) above are relaxable in case the research work of candidate as evident either from his thesis or from his published work is of a very high standard. If a candidate possessing a Doctor's degree or equivalent research work is not available or is not considered suitable, a person possessing consistently good academic record (weightage being given to M. Phil or equivalent degree or research work of quality) may be appointed provided he has done research work for at least two years or has practical experience in a research Laboratory/Organisation on the condition that he will have to obtain a Doctor's degree or give evidence of research work of equivalent high standard within five years of his appointment, failing which he will not be able to earn future increments until he fulfils these requirements.

SPECIALISATION

Good knowledge of the subject of International Law and International relations.

2. Research Associate in Centre for Research in Economic-Change :—(One). (Rs. 700-40-1100-BB-50-1300).

QUALIFICATIONS

- (a) Ph.D in Economics/Agricultural Economics.
- Knowledge of Punjab Economy and its problems.

3. Senior Technical Assistant in University Service and Instrumentation Centre (One). (Rs. 550-25-750-EB-30-900).

QUALIFICATIONS

Diploma in Mechanical Engineering with 5 years' experience in workshop practice and ability to lead and supervise the work of a group (Candidates with additional experience of supervisory work in a mechanical workshop will be preferred.) Candidates will be given practical test at the time of interview.

4. Research Scholars in Human Biology—(Two).

(Tenable for two years in the first instance @ Rs. 400/- p.m. all inclusive).
QUALIFICATIONS

Candidate should possess at least second class Master's degree with at least one year teaching/Research experience after obtaining the Master's degree provided that the condition of experience may be relaxed in the case of first class M.Sc.'s provided further that a candidate with atleast 55% marks both in B.Sc. and M.Sc. could also be considered in case no first class M.Sc. is available.

GENERAL

Higher start within the grade admissible depending upon the ability and experience of the candidate. House rent and Dearness allowance, Provident Fund and Medical facilities according to the University rules.

Applications, complete in all respects on the prescribed form, accompanied by a crossed postal order worth Rs. 5/- (Rs. 2/- for candidates belonging to Scheduled Castes/Tribes and Backward Classes) drawn in favour of the Registrar, Punjabi University, Patiala should reach the University by 28-3-1979. The forms can be had from the Superintendent (Establishment) by sending a self-addressed envelope of the size of 23×10 cms stamped with 25 paise postage.

Persons already in service should apply through proper channel; Govt. servants who are not in a position to submit their applications through proper channel before the due date should submit an advance copy before the due date and regular applications through proper channel by 31-3-79.

Gurbachan Singh
REGISTRAR

JAWAHARLAL NEHRU UNIVERSITY NEW DELHI-110067

Advertisement No. Aca. III/5/79

Applications are invited for the post of an Associate Professor in Geology for the School of Environmental Sciences of the University.

QUALIFICATIONS Essential

- (a) Consistently good academic record with at least high second class Master's Degree in Geology or its equivalent qualification from an Indian/foreign University.
- (b) A Doctor's degree or published work of an equally high standard in Geology.
- (c) About five years experience of teaching and/or research.

Desirable

- (a) Interest and experience in Geochemistry of mineral deposits.
- (b) Desire to participate in inter-disciplinary teaching and research programmes in Environmental Sciences.

SCALE OF PAY

Rs. 1200-50-1300-60-1900 plus usual allowances as admissible to the members of the staff in the Central Universities.

Relaxation in any of the qualifications may be made (a) in favour of persons of eminence or of high academic professional distinction, and (b) in exceptional cases where adequately qualified persons are not available but are otherwise found suitable for the post. It will also be open to the University to consider the names of suitable candidates who may not have applied.

The selected candidate will be expected to participate in the teaching and research programmes in the concerned discipline in other Schools of the University as well as in the programmes offered in his own School.

Benefits of C.P. Fund-cum-Gratuity/G.P. Fund-cum-Pension-cum-Gratuity are available as per University rules.

Persons already in employment should route their applications through proper channel.

Second class (mail) rail fare (both ways) will be paid to candidates invited to appear for interview from outstation by the shortest route subject to the production of rail receipt.

Applications, on the prescribed form, obtainable free of cost from the University by sending a self-addressed and stamped envelope of 23cm×10cm size to the DEPUTY REGISTRAR (ACADEMIC), JAWAHARLAL NEHRU UNIVERSITY, NEW MEHRAULI ROAD, NEW DELHI-110067, should reach him latest by 7.4.1979.

Candidates from abroad applying for faculty positions, may apply on plain paper, (but their applications should reach the University by the last date) furnishing all the relevant informations such as their names, date and place of birth, marital status, nationality, state of domicile, postal and permanent addresses, father's name and address, academic and professional attainments, full details of (a) publications, and (b) research projects undertaken; language (s) known; details of visits to foreign countries and the name and addresses of at least two persons well acquainted with the candidates professional work who should also be requested by the candidate to forward to the DEPUTY REGISTRAR (ACADEMIC) confidential report concerning the candidate.

CENTRE OF SOCIAL MEDICINE AND COMMUNITY HEALTH

JAWAHARLAL NEHRU UNIVERSITY

NEW DELHI-110067

Advertisement No. Aca. III/3/79

Applications are invited for the following posts:

SCHOOL OF SOCIAL SCIENCES

1. Associate Professor/Fellow in Community Health

Qualifications

- (a) A consistently good academic record in MBBS or an equivalent qualification from an Indian or foreign university.
- (b) A post-graduate degree in any aspect of community health.
- (c) A doctoral degree in any aspect of community health or published work of an equally high standard.
- (d) About five years of teaching experience or experience in developing inter-disciplinary approach to the education and training, research and consultation in the field of community health.

2. Assistant Professor in Social Anthropology

Qualifications

Essential

- (a) Consistently good academic record, with at least high second class Master's degree in Sociology/Social Anthropology/Community Health or its equivalent qualification from an Indian/Foreign University; and
- (b) A doctor's degree or published work of an equally high standard.

Desirable

Some teaching or research experience.

3. Assistant Professor in Community Health

Qualifications

Essential

- (a) A consistently good academic record in MBBS or an equivalent qualification from an Indian/Foreign University.
- (b) A post-graduate degree in any aspect of community health.
- (c) A doctoral degree in any aspect of community health or published work of an equally high standard.

Desirable

Teaching or research experience in the field of Community Health.

Note

For the post No. 2 and 3.

If the Selection Committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of a very high standard it may relax any of qualifications prescribed in (a) above

Further if a candidate possessing a Doctor's degree or equivalent research work is not available or is not considered suitable, a person possessing a consistently good academic record (weightage being given to M.Phil./M.D. or equivalent degree or research work of quality) may be appointed provided he has done research work for at least two years or has practical experience in a research laboratory/organisation on the condition that he will have to obtain a Doctor's degree or give evidence of research work of equivalent high standard within five years of his appointment, failing which he will not be able to earn future increments until he fulfils these requirements.

SCALES OF PAY

1. Associate Professor/Fellow
Rs 1200-50-1300-60-1900
2. Assistant Professor
Rs 700-40-1100-50-1600

Plus usual allowances as admissible to the members of the staff in the Central Universities.

Relaxation in any of the qualifications may be made (a) in favour of persons of eminence or of high academic/professional distinction, and (b) in exceptional cases where adequately qualified persons are not available but are otherwise found suitable for the respective positions. It will also be open to the University to consider the names of suitable candidates who may not have applied.

The selected candidates for faculty positions will be expected to participate in the teaching and research programmes in the concerned discipline in other Schools of the University as well as in the programmes offered in their own Centres of Studies.

Normally appointment of Fellows is made on contract basis for a period ranging from one to three years.

Benefits of C.P. Fund-cum-Gratuity/G.P. Fund-cum-Pension-cum-Gratuity are available as per University rules.

Persons already in employment should route their applications through proper channel.

Due consideration will be given to candidates belonging to SC/ST at the level of Assistant Professor.

Second class (mail) rail fare (both ways) will be paid to candidates invited to appear for interview from outstation by the shortest route subject to the production of rail receipt.

Applications, separate for each post, on the prescribed form, obtainable free of cost from the University by sending a self-addressed and stamped envelope of 23cm×10cm size to the DEPUTY REGISTRAR (ACADEMIC), Jawaharlal Nehru University, New Mehrauli Road, New Delhi-110067, should reach him latest by 6.4.1979.

Candidates from abroad, applying for faculty positions, may apply on plain paper, (but their applications should reach the university by the last date) furnishing all the relevant information such as their names; date and place of birth; marital status; nationality; state of domicile; postal and permanent addresses; father's name and address academic and professional attainments; full details of (a) publications, and (b) research projects undertaken; language(s) known; details of visits to foreign countries; and the names and addresses of at least two persons well acquainted with the candidates professional work who should also be requested by the candidates to forward to the Deputy Registrar (Academic) confidential report concerning the candidate.

**JAWAHARLAL NEHRU
UNIVERSITY
NEW DELHI-110067**

Advertisement No. 6/ADMN. III/'79

APPLICATIONS are invited for the following posts in the University.

1. SUPERINTENDENTS
(ACCOUNTS CADRE)
 2. NURSE
 3. HEAD ELECTRICIAN
- Qualifications and Experience
for Post No. 1

A good Degree from a recognized University. Atleast seven years' experience in accounts/secretarial (administrative) work, preferably in a junior supervisory post in a University/Government/Semi Government Organisations/Autonomous organisations/Public/Private Undertakings of repute.

For Post No. 2

Atleast Matriculation with three years' Diploma in General Nursing and Six Months' Midwifery Course.

For Post No. 3

ITI Trade certificate with minimum practical experience of Ten years in erection and running and maintenance of different types of both HT and LT mains alongwith installations including underground cable system. Must possess Electrical and Supervisory certificate of competency.

Scale of Pay

For Post No. 1—Rs 550-25-750-EB-30-900

For Post No. 2—Rs 425-15-560-EB-20-640

For Post No. 3—Rs 330-10-380-EB-12-500-EB-15-560

Age Limit

For Post No. 1: 40 years; For Posts No. 2 and 3: 35 years—Relaxable upto five years in the case of candidates belonging to Scheduled Castes/Tribes/Ex-Servicemen/Physically Handicapped and/or having special/technical qualifications.

Reservations

For Post No. 1—15% and 7½% for members belonging to Scheduled Castes/Tribes respectively;

For Posts No. 2 and 3—16.2/3% and 7½% for members belonging to Scheduled Castes/Tribes respectively;

For Posts No. 1, 2 and 3: 10% for Ex-servicemen and 1% for Physically Handicapped personnel.

Written Examination

For Post No. 1

- I. 'Essay, Office Precise, Drafting and Applied English Grammar';
- II. 'General Office Procedure and Government Service Rules';
- III. 'General Financial Rules, Book-keeping and Auditing';
- IV. 'University Financial Administration, University Act, Statutes and Ordinances'

*Note

After putting in six months of satisfactory probation period the selected candidates will have to appear in the IV paper.

General

Any of the above qualifications/experience may be relaxed by the University.

The person selected for appointment as Nurse will have to stay on the Campus on the rent-free, unfurnished residential accommodation that will be allotted by the University.

Benefits of CP Fund-cum-Gratuity/GP Fund-cum-Pension-cum-Gratuity are available as per University Rules.

Central Government Health Scheme and Leave Travel Concession benefits are also admissible as per University Rules.

Both ways second class rail fare by the shortest route will be paid to the candidates invited for interview/tests from outside Delhi.

Personnel already in the employment should route their applications through proper channel.

A higher starting pay may be granted to a highly qualified candidate.

APPLICATION FORMS are obtainable, free of cost, either personally or by sending a self addressed and STAMPED envelope of the size 10 x 23 cms, within twentydays from the date of release of the advertisement, to the Superintendent, Administration III, Room No. 101, Old SLS Bldg, NAA Campus, Jawaharlal Nehru University, New Mehrauli Road, New Delhi-110067.

Completed application forms must reach the Deputy Registrar (Administration), Room No. 102, Old SLS Bldg, NAA Campus, Jawaharlal Nehru University, New Mehrauli Road, New Delhi-110067, not later than 24th March 1979.

**GURU NANAK DEV
UNIVERSITY
AMRITSAR**

Advertisement No. 3/79.

Applications are invited for the post of Professor of Applied Chemistry in the grade of Rs 1500-60-1800-100-2000-125/2-2500 plus allowances as admissible under University rules on prescribed form obtainable (free of cost) from Office of the Registrar by making written request accompanied by self-addressed stamped envelope of 23 x 10 cms, so as to reach this office by 10.4.1979 alongwith crossed postal order(s) for Rs 7.50 drawn in favour of Registrar, Guru Nanak Dev University, Amritsar. Application fee is not refundable.

Persons already in employment must send their applications through their employers.

Qualifications

An eminent scholar with published work of high quality actively engaged in research. Ten years experience of teaching and/or research. Experience of guiding research at doctoral level.

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge.

Specializations

- (i) Research experience in extraction and hydrogenation of oils, soaps, fats, paints, varnishes and dyes.
- (ii) Experience of working in an industrial concern on research problems of applied nature or environmental sciences, etc.

Note

If a qualified person is not available for Professor's post the Selection Committee may consider appointing a suitable person at Reader's level or qualifications may be relaxed in case of persons found suitable otherwise.

Mohinder Singh Randhawa
REGISTRAR

**INDIAN INSTITUTE OF
TECHNOLOGY
KHARAGPUR**

Advertisement No. R/1/79—(Continued)

Applications are invited for the undermentioned pos at the Indian Institute of Technology, Kharagpur, West Bengal:

1. ASSISTANT PROFESSOR

Scale of Pay

Rs 1200-50-1300-60-1900 plus D.A. as admissible.

Age

Preferably between 30 and 45 years.

Qualifications : Essential

- (i) A good academic record with a Bachelor's or Master's degree in the appropriate branch and a Doctorate degree.
- (ii) Seven years' experience in the field of specialisation prescribed, of which at least 2 years should be in teaching and/or research.

Desirable

- (i) Published research work of good standard.
- (ii) Experience in guiding research.

Vacancies & Specialisation

(i) Mining Engineering: (three posts)
Specialisation in one or more of the following:

- (a) Mining Engineering (b) Mining Technology (c) Mine Environmental Engineering (d) Mining Machinery (e) Operation Research and Management (f) Mine Planning.

(ii) Humanities and Social Sciences:
for Hindi (one post)

This post was included in advertisement No. R/1/79, but the fact that the designation of the post is Assistant Professor was inadvertently omitted. Qualification, experience and job requirements are the same as advertised earlier.

2. LECTURER

Scale of Pay

Rs 700-40-1100-50-1600, plus D.A. as admissible.

Age

Preferably between 25 and 38 years.

Qualifications

Essential

- (i) A good academic record with a Master's degree in the appropriate branch.
- (ii) Two years' professional experience.

Desirable

A Doctorate degree.

Vacancies and Specialisation

Humanities and Social Sciences: (one post)

Specialisation in Sociology & Political Science.

Application forms may be had from the Registrar on request along with an unstamped self-addressed envelope of size 23cm x 10cm. Applications accompanied with an application fee (non-refundable) of Rs 7.50 (Re 1.87 for SC/ST candidates) payable by means of crossed Indian Postal Order to the Indian Institute of Technology, Kharagpur, at Kharagpur-2 Post Office should reach the Registrar, IIT Kharagpur by the 31st March 1979 for above posts.

A.K. Sur
REGISTRAR

SOUTH GUJARAT UNIVERSITY

**"UNIVERSITY CAMPUS, UDHNA
MAGDALLA ROAD" P.B. No. 49,
SURAT-395007**

Applications are invited in the prescribed form (in eight copies) for the following teaching posts in the Post-Graduate Departments of the University:

Sr. No, Name of the Department and the Number of posts

1. LINGUISTICS

(i) One Professor of Linguistics
A person with outstanding qualifications and research of merit in Linguistics and Gujarati language.

(ii) One Reader
Reader in Gujarati Language and literature with specialization/training in Linguistics.

2. ENGLISH

Two Lecturers

(i) One having specialization in English/American Literature

(ii) One having some knowledge of language laboratory techniques.

3. ECONOMICS

One Reader (Econometrics)

4. RURAL STUDIES

One Reader

A person with a doctorate in Rural Economics with specialisation in rural industrialisation and Marketing Rural Finance and Co-operation will be preferred.

5. CHEMISTRY

Two Readers

Qualified in Theoretical Chemistry/Physical Organic

6. MATHEMATICS/STATISTICS

(i) One Reader in Mathematics

(ii) One Lecturer in Statistics

7. BUSINESS AND INDUSTRIAL MANAGEMENT

(i) One Professor

(ii) One Reader

(iii) Two Lecturers

Professor-Reader are required in the following specialized areas:

(1) Organisation Behaviour and Personnel Management.

(2) Marketing Management.

Lecturers are required in following areas:

One in Financial Management and the other in Organization Behaviour and Personnel Management.

8. PUBLIC ADMINISTRATION

One Lecturer

Having specialization in one or more of the following areas:

(1) Rural Development Administration.

(2) Personnel Administration.

(3) Extra-Departmental Agencies.

Pay Scales are as under:

(1) Professor : Rs. 1500-60-1800-2000-125/2-2500.

(2) Reader : Rs. 1200-50-1300-60-1600-Assessment-60-1900.

(3) Lecturer: Rs. 700-40-1100-50-1300-Assessment-50-1600.

In addition to pay the teachers of the University Departments are entitled to draw dearness allowance, house rent allowance and other benefits like contributory provident fund and gratuity as may be decided from time to time.

Information about the qualifications prescribed for each post and application forms prescribed for each post can be had from the undersigned on payment of Rs. 7.00 in cash or by Postal Order alongwith self-addressed envelope of 23 cm x 13 cm size duly stamped with Re. 0-50 ps. The last date for the application is 30.4.1979.

**G. A. Desai
REGISTRAR**

UNIVERSITY OF JAMMU

JAMMU TAWI-180001

Situations Vacant

Applications on prescribed forms are invited for the following teaching posts so as to reach the undersigned on or before 20 April 1979.

1. Professors (Rs. 1500-2500) one each in:-

(i) Chemistry (Inorganic/Physical), (ii) English, (iii) Physics (Experimental Particle Physics/Particle Phenomenology), and (iv) Economics (International Economics / Macro Economics/Monetary theory).

2. Readers (Rs. 1200-1900) One each in:

(i) Commerce and (ii) Applied Electronics.

3. Lecturers (Rs. 700-1600), One each in:

(i) Commerce (ii) Economics (Sociology). (iii) Ancient Indian History (Leave vacancy) (iv) Botany (Plant Embryology) (v) Zoology (Animal Cytogenetics) and (vi) Business/Office Management (Quantitative Techniques).

For full details and prescribed application forms please apply by sending a self addressed envelope of 25cmsx10cms size bearing postage stamps worth Re. 1.50 paise alongwith a crossed postal order of Re. 1/- drawn in favour of the Registrar, University of Jammu. Canal Road, Jammu Tawi-180001, Jammu and Kashmir State, cashable at Jammu Post Office.

**Ram Sarup
REGISTRAR**

AMERICAN STUDIES

RESEARCH CENTRE

HYDERABAD-500007

DEPUTY DIRECTORS

Applications are invited for the position of two Deputy Directors one in American Literature and the other in American History/Social Sciences. The selected candidate is expected to serve as Advisor to ASRC scholars and other members, to serve as editor of various ASRC publications, to work as a Subject specialist in the Library, to supervise the ASRC awards programme, and to act as an Adviser to the Centre's Director, in academic and administrative matters.

Qualifications

Ph.D., in some aspect of American Studies or Literature for one position, and History or one of the Social Sciences (preferably political science), for the other; must have a record of distinguished scholarly publication, and extensive experience in academic guidance, administration, editorial work, and university teaching.

Grade

Rs. 1500-60-1800-100-2000-125/2-2500.

The starting salary will be determined on the basis of qualifications and experience.

Selected candidates will be offered initially a two year appointment, which may be followed by a five year term, renewable on a permanent basis.

Applications giving full particulars should be sent through proper channel before 15 April 1979 to the Director, American Studies Research Centre, Hyderabad-500007.

Candidates invited for an interview will be given first-class round trip train fare between their residence and Hyderabad.

INDIAN INSTITUTE OF TECHNOLOGY KANPUR

KANPUR-208016

Advertisement No. 11/79

Applications are invited for a post of Assistant Security Officer in the pay scale of Rs 425-15-500-EB-15-560-20-700 at this institute.

Qualifications & Experience

Graduate+6 years' experience of Security Supervision in a Government recognised organisation.

OR

Released personnel from Defence Services of the rank not below Senior J.C.O. or of equivalent rank from Police or Industrial Security Force.

The Security Unit is headed by a Security Officer. There are at present one Dy. Security Officer and two Assistant Security Officers. A total strength of 120 Security Guards and five Security Supervisors help in maintaining watch and ward duties round the clock in the Campus which has a living population of about 10,000 persons. The Campus area is well spread out and the Security Unit is required to protect the Institute property. The Assistant Security Officer is required to stay in the Campus and is provided with unfurnished rent free accommodation as per his entitlement.

Post is permanent and carry retirement benefits in the shape of CPF Scheme or CPF-cum-Gratuity Scheme or GPF-cum-Pension-cum-Gratuity Scheme as may be opted according to rules. The age of retirement is 60 years. During the first year, the appointment will be on probation. Besides pay, post carry allowances according to the Institute rules, which at present correspond to those admissible to the Central Government employees stationed at Kanpur. Candidates called for interview will be paid second class railway fare from the place of duty to Kanpur and back by the shortest route.

Applications must be made on prescribed form obtainable free of charge from the Registrar of the Institute by sending a self addressed unstamped envelope of 25 cm x 10 cm size. Application should be accompanied by a postal order for Rs 7.50 (Rs 1.87 for SC/ST candidates).

Applications should reach the Registrar, Indian Institute of Technology, Kanpur-208016 U.P. (India) on or before April 30, 1979.

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*Opinions expressed in the articles
and reviews are individual and do
not necessarily reflect the policies
of the Association*

Hony. Editor : ANJNI KUMAR

President's Address 54th AIU Session

Dr. C.R. Mitra, President, Association of Indian Universities & Director, BITS, Pilani, delivered the Presidential Address at the 54th annual meeting of the Association held on 8th March, 1979 at the Punjabi University, Patiala.

It is said that when a human being crosses the half-century mark, he contemplates on how to pass on his charge to the next generation. But an organisation, particularly an organisation which has participated in history-making, must find this occasion as a water-shed in its history to reflect on what role it played and what is the direction it wants to take. In this review of its role the organisation is prompted to capture some of the moments of its glory in the past and lives the future in terms of the new dreams that it dreams. It would be a misunderstanding of the historic process to believe that the past was full of boredom and only the future is full of excitement. An organisation such as ours must, therefore, draw out a plan for the future while maintaining its fidelity to the past traditions. AIU today must face several new challenges just as it willingly responded to tough challenges in the past. Our review of our status acquires a particular immediacy in view of the fact that after 10 long years of suspenseful waiting we have acquired the possession of our land on which we want to build our AIU House. The time allowed for building this House is only two years and hence the need for marshalling all our genius, sacrifice and boldness to achieve this objective.

Our task is rendered doubly difficult on two counts. First, the building fund that you helped create is not adequate. Secondly, we have difficulty even in balancing our annual budget in spite of the recent increase in the rate of subscription. Instead of accepting defeat, let us choose the path of daring and hardship. I propose that we should proceed on a major fund raising drive in order to construct all the square feet that the law permits. Simultaneously, it should be possible for us to review our working and undertake more activities in order to qualify for more grants from the Government. This additional grant together with the revenue we earn by renting out part of the new space would put AIU in a solvent position in the near future.

Before I go into details of the new tasks that we propose, let us once more examine the unique character of AIU. In the arena of higher education we are the only organisation which is a voluntary private association and, therefore, uniquely suited to fill certain special needs which, by the very nature of things, cannot be filled by the Ministry of Education, the U.G.C. or other agencies. The other two features of AIU lie in the fact that we have no statutory authority and we have no funds to disburse. Said in another way, our power and strength lie in persuasion, in honouring the autonomy of our members, in moving into a search of the status of education in our various universities rather than centrally deciding what is good for all our members. Whatever point of view we pilot, whatever partisan attitude we take, it is necessary that I remind you that our collective role is distinctly different from the role of other agencies charged with the task of looking after the wellbeing of higher education in the country. We must, at this juncture, refer back to this particular heritage, sharpen our thinking and carry on into the future without doing violence to this heritage. Let us desist, as an organisation, from suggesting a standard model of development, a formal code of conduct and a simple panacea for the solution of all the ills of the universities. On the other hand, we can and must become the only organisation in the country which can reflect, in the miniature, the experience, working and thinking of each university in its local, regional and sub-cultural milieu. If we always remain alert to this unique service, we

offer to each member a kaleidoscopic image of what is happening to all the members.

The above process, however, should not be confused with the process which is embedded in any administration—in this case the management and administration of the AIU office and staff. Here we must usher in new impersonal administrative rules and devices to make the physical tasks achievable and the new educational emphasis consciously cultivable.

I have already mentioned the need to balance the budget, build a building which would generate an income and negotiate with the government for increased grants. I would like to mention now a few of the items I have stated in my interim report. It seems that our basic rules and regulations not only for the AIU Society, but also for our sports and other various activities require a review in order for us to effectively meet the requirements of a modern business life and the various administrative changes which have taken place in the Indian university system. Without this we are left with the uncomfortable alternative of dealing with each new development on an ad hoc basis. Since the study is complicated and requires the guidance and advice of many types of experts, we have to await the findings for a little while. But I am satisfied that in this matter we cannot lose sight of the fact that, in our organisation, policy is determined by vice-chancellors who are relatively transients while implementation is left to the competence of the secretariat which is relatively enduring. To avoid confusion and achieve a sense of direction, it seems to me that on the policy plane we have to go wider and deeper so that the guidelines to the secretariat become less ambiguous and ambivalent. Further, the secretariat should be allowed to function in an atmosphere where each individual must feel that he is a member of a coherent team and his salvation is part of the salvation of the whole team. I have suggested that it should be possible to create a condition where senior officers not only will be specialists in their very narrow domains or activities, but would also become aware of the processes and the methodology of the work and activity of brother officers. It is through this process that we would become an organisation where a band of officers would complement and strengthen one another.

I am happy to mention that the Ministry of Education has responded significantly to our new definition of our tasks. There is a good possibility of the increase of the grant that the Ministry gives us. This increase is contingent on the proposal which we have made to the Ministry. I may clarify that this proposal takes its cue from the interim report. This proposal basically attempts the following:

A fresh delineation has been made of the various services and tasks that the AIU has been rendering. To this category have been added a few additional items and regrouping of some of the old activities. For instance, there is a suggestion that like the Medical Handbook, we prepare and publish similar handbooks for other professional degrees in the first instance and a handbook specially designed for foreign students who seek admission in the Indian universi-

ties. Our present involvement in two areas of open-ended research is to be readjusted in such a manner that we could produce research outputs on a wider front of issues and concerns in higher education and submit time-bound reports of contemporary interest to the Ministry of Education. I am satisfied that we can meet this task by appropriate adjustment of emphasis and redeployment of manpower. I am sure, it will create greater job satisfaction and job security for our staff.

We have asked that more representation for the AIU should be given by the government in the various organisations and agencies. We have suggested that a new journal may be published. We have requested for support towards the building fund. We have requested for allocation of land and house building funds for AIU staff.

Within the brief months, left vacant by the retirement of my predecessor, Dr. L.S. Negi, that I have filled so far I have come to the conclusion that the visibility of AIU is not as strong as it deserves. I feel that there is room for greater interchange and interaction between the AIU on one hand and the Ministry of Education, UGC and other agencies on the other hand. These can and should be strengthened. I believe the plan that is being launched will go a long way in that direction. But there is another dimension of interaction which we have not even attempted to undertake. I mention the role of the AIU vis-a-vis State agencies concerned and dealing with universities in the respective States. I have written personal letter to the various Chancellors and Chairmen of Boards of Governors of universities, deemed universities and institutions of national importance. I hope that part of our pre-occupation with central agencies would yield to our new task of opening out fresh channels of communication, understanding and services with agencies functioning at the state levels.

These past few months have been quite hectic and packed with events. I plead guilty of demanding from the Secretary, other officers and all staff of the secretariat long hours of work. I have inflicted many letters upon my colleagues. I do not know how every one has felt; but I humbly acknowledge my gratitude for the good words, constructive comments and support of my colleagues. I am equally indebted to the loyalty and devotion of the entire secretariat.

Having said something about our house-keeping matters and our future, I now turn to this year's annual meeting. We have assembled here after our get-together in Delhi where the Foundation Stone for the AIU House has been laid by Dr. Partap Chandra Chunder, the Union Minister of Education, Social Welfare and Culture. Through this kind act, the Minister, I believe, has set us on a task which not only includes the new building, but also offers a new vista, a new challenge.

On this momentous occasion we arranged a panel discussion on 'Universities and National Development'. The composition of the members on the panel is specially significant to me. We were fortunate to obtain the participation of some of the very keen thinkers, distinguished visionaries and able administrators. Even though some of them are no

longer practitioners in the realm of higher education, they are its abiding friends, well wishers and counselors. I believe the panel discussion was able to bring to our doors what they collectively felt was our role in the context of national development.

In our programme at Patiala the group discussion themes have attempted to identify three crucial matters from which we seem to have deflected too often in the past. It is not for me to anticipate the outcome of these group discussions, but it appears to me that a few words on the justification of including these themes would be valuable. It is my hope that the discussion on 'Cost of Higher Education' would not go in the direction where it is considered axiomatic to state that more money will automatically make for greater excellence. Our obsession with money not only takes us to failure but keeps us preoccupied with dysfunctional tasks. I hope the discussions would give us some insight into this complex process and yield concepts and strategies by which the same excellence can be achieved through less expenditure. In costing of higher education it is obvious that the process rather than the product should be our main concern. In a developing country it is the process which has to be self-generative and which should become unique and yet turn out a product which can compete with the products of the developed countries.

The second important topic in our group discussion is 'Internal Management of Universities'. It seems to me not only that we never modified the archaic administrative procedures that we inherited from the period prior to Independence, but we have added on more of such procedures without making any fundamental analysis as to what system of management we need for the task in hand. It is obvious that, in a vast country like ours, one university will differ from the next in such details that a self-assured management technique and method cannot be imposed from outside. Each university has to learn to discover its own techniques and rules of procedure.

The third topic in our group discussion is 'Linkage with Environment'. This obligation is far too often accepted without understanding that this is commitment, it is a risk; and involvement has to come from a sense of humility and not through the big-brother approach that we often flaunt. Indeed, this should be a process through which we partly pay back to our society what the society has so generously given us. As long as linkage with the environment remains a discrete and unintegrated component of our task and purpose we shall for ever remain alienated from our environment and only invite further justified hostility. Let us face it. If we do not know how to create bridges within the university between department and department, between faculty and faculty, between students and teachers and administration, our claim that we can bridge the gap between our ivory tower and the environment is exposed as a hollow claim.

No address touching on the university system could be complete without some observation on the three key elements, namely, administration, faculty and students. Let me begin with the students. Much

has been said about this aspect, but emphasis has been in terms of peace or quiet in the campus. The syndrome has gone to such an extent that these days whenever vice-chancellors meet the first question asked is in terms of the degree of peace in respective campuses. I am reminded of the standard greeting in some languages, 'let peace be with you', as a distinct carry over from the days of tribal warfare. It seems to me that this is a myopic view to take. Students are also unable to articulate their problems effectively. Thus, we are unable to analyse why almost within a span of few months students in one university agitate for abolition of the semester system, while the students of another university agitate for introduction of the semester system. I think this is one place we are missing the forest for the wood. I am confident that basic educational reform must always remain one of the major ingredients in the solution of the problem.

In the case of the faculty we again try to look at the problem in terms of academic autonomy or lack of autonomy. Autonomy has to be examined in the context of the total system. It entails a privilege as well as a responsibility. It appears to me that fundamental key issue here is one of responsibility that has to be thrust on the faculty to make educational reform and, what is more important, to manage the reform. As long as this twin task of planning and managing reform is not undertaken by the faculty, no solution will emerge.

An association which has been often referred to with levity as a vice-chancellors' club must concern itself with the club members. Much has been written and said about the job specifications of a vice-chancellor and the mode of his selection. But it is strange that we have skirted two main issues, namely; the status and the security of the vice-chancellor's job. It is a sad commentary on our sense of priorities that when action plan was piloted throughout the country to usher in the UGC salary scales for the faculty, the question of the salary scales of the vice-chancellors was left to uncertainties and chance. Similarly, the man or the woman who is catapulted into the office of the vice-chancellor is consistently faced with the choice of continuing as a vice-chancellor or being without a job. Even statutes have been changed to such an extent that in many universities the vice-chancellors hold their post at the pleasure of the chancellor and can be removed by law on a moment's notice. In today's context a bland statement of this nature would not be even accepted by an intended domestic servant. I would like to suggest two immediate actions. Any person who is appointed a vice-chancellor should be concurrently appointed as a regular professor in the same university. If a person is good enough to be a vice-chancellor, in my logic he is good enough to be a professor of a university. This will, in a crunch, give the incumbent something to fall back upon. Secondly, the same authorities who piloted the UGC salary scales should undertake the task of standardization and revision of the salary scales of vice-chancellors.

Before I close it would be pertinent to ask: how

(Continued on page 198)

Cost of Higher Education

Methodology for Measurement

S. K. R. Bhandari*

It has been widely said that the cost of higher education is very high and that it places a very heavy burden on the exchequer. The truth of these observations cannot be judged unless one knows what the cost is and what one implies by the term 'cost'. The term 'cost' could mean either the total cost of the entire higher education system which would include all the universities, all the colleges, the institutes and other institutions of higher education; or it could just mean the cost to the Government (centre and states combined or separately). It could also include the expenditure incurred by the student in the payment of fees and on books and supplies as also on his maintenance and travel. Or one could just mean the cost to the students or their parents. It could also mean cost per student. All these concepts will give different figures. Then, there is the problem of varying costs in the different segments of higher education viz. Humanities, Social Sciences, Sciences, Agriculture, Technology, Medical etc. or the segments like Institutes, Central Universities, State Universities, Government Colleges, Private Colleges, etc.

It is the purpose of this paper to outline a methodology for the measurement of costs. We propose to confine ourselves to two aspects viz, the per student cost of education in a Central University, determined separately for its different segments viz., Humanities, Sciences etc. It will include only the expenditure incurred by the University (and not that by the students, except by way of fees paid to the University, which forms part of University revenues). The measurement of costs even to this limited extent calls for sorting out many conceptual and methodological issues. The study is further based on the data collected for one University and is not claimed to be representative.

It may be noted that the exercise on computation of costs will be based largely on the users' needs, which may be for evaluating management performance, for finding out costs of particular projects or of particular activities or for other purposes.

CONCEPTUAL ISSUES

(i) Expenditure peculiar to a residential campus

The expenditure in a University with a large

residential campus would differ from that in a non-residential university in many respects. For instance, there may be large expenditure in the former case on the maintenance of electric and water supply services; on running sanitary and conservancy services; on the repairs, maintenance and depreciation of residential premises; on social and religious ceremonies etc, which would not figure in the latter case. Similarly, the expenditure on student residences, student health services and other student amenities will be larger than that in non-residential universities.

(ii) Elements of costs

The costs could be divided by elements and by segments, i.e. different faculties, colleges etc. The elements that may be identified could be :

- (A) Teaching and Research, (B) Administration,
- (C) Common Services, (D) Student Facilities,
- (E) Employee Residences, (F) Public Service.

A. Teaching and research

This will include salaries etc. of teaching staff; expenditure on libraries and laboratories (which would include staff salaries etc. books and periodicals, equipment, supplies and other miscellaneous expenditure), other expenditure directly related to teaching and research, such as travel, electric and water supply in buildings, purchase of teaching aids etc. The issues to be settled are :

- (1) What items should be included ?
- (2) Should expenditure on all items be included in full or in part (as for instance, salary of the Head of the teaching department) ?
- (3) Should portion of expenditure on other elements, such as General Administration and Services, be allocated to this head, because without these teaching and research cannot be carried on effectively or should they be treated as distinct elements and kept separate ?

B. General administration

This element consists broadly of two distinct categories; viz, (i) the overall university administration which includes the Vice-Chancellor/Pro-Vice-Chancellor or Rector's Office, the Registry (including Examination and Finance Wings), the Proctorial Services and the like; and (ii) The administration of faculties/colleges. The issues are :

- (1) In each category, what items should be separately identified, for instance, personnel costs could be separately worked out for officers, clerical and secretarial staff and for subordinate staff. The costs of suppliers, furniture and equipment, stationery, petrol etc. could be separately worked out. Travel and other expenses of a sizeable amount could be separately stated. The general principle could be that all expenditure of a distinct character and amounting to at least one percent of the

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total expenditure (under the element concerned) should be identified separately.

- (2) How should costs of overall administration be allocated to the segments? This is really an independent issue and would be relevant even for other elements and may be discussed separately?

C. Common services

These may include ancillary services viz.

- (i) Electric and Water Supply;
- (ii) Sanitation and Conservancy;
- (iii) Medical and health; (iv) Printing etc.

A further question may arise whether academic services such as centralised library facilities computers and other sophisticated instruments etc. used by several segments should be coupled with the non-academic ausculiary services, kept separately or added on to teaching and research.

Since many of these services are paid for by the users, the question of matching costs and revenues and pricing of the services are also important issues requiring clear enunciation of policies and principles.

D. Student facilities

These include hostels, games and sports, medical and health, recreation etc. They also include elements of general administration and common services cost. The issues here would be

- (i) identification of elements of costs;
- (ii) allocation or non-allocation of administrative and service costs
- (iii) basis of allocation
- (iv) matching of costs and revenues
- (v) determination of per capita costs—for the entire university or by faculties/colleges.

E. Faculty/staff residences

These include costs of maintenance, repairs and depreciation of residences provided to the teaching and other staff. The issues are :

- (i) the identification of elements of costs to be included under this head;
- (ii) allocation of common costs such as on materials and labour used in repairs and maintenance; and
- (iii) separation or not of costs for different categories of employees.

F. Public service

A number of activities of the university departments directly provide benefits to the public at large (for which they may be paying full costs or part of the costs or are gratuitous). These include medical treatment in hospitals and public health services, agricultural extension services, industrial, technical and managerial consultancy services, computer and instrumentation services, adult education, supply of products (such as agricultural and dairy products or pharmaceutical products). The issues are (a) identification of the areas involved, (b) allocation of common costs to teaching and research, student and staff welfare and public service, (c) allocation of

share of general administration and auxiliary services, costs to the public service heads, (d) fixing of prices for such services—which could be either nominal, equal to direct cost, equal to total unit cost or higher than total unit cost.

(iii) Bases for apportionment of common costs

As some of the previous discussion indicated, one of the most important issues in determining costs of higher education by elements or segments, is the apportionment of common costs to the element segment concerned. A number of bases could be thought of in this connection.

(a) **Direct relationship** : Where the expenditure concerned could be directly identified to particular elements/segments it may be allocated to those elements/segments. For instance (i) expenditures on hostels are directly related to the number of students residing in hostels while expenditures on particular hostels pose no problems, the common expenses on hostels can also be allocated to the faculties/colleges concerned on the basis of number of hostel residents belonging to each faculties/colleges, or (ii) Expenditure on computer facilities is directly related to the use of computer time by each faculty/college or administrative department. The per hour (or per minute) cost may first be worked out (both direct and total) and then allocated on the basis of time used, or (iii) Electric and water supply charges could be worked out per unit of consumption and charged by total units consumed, wherever the supply is metered. However, where it is not separately metered, this basis would not serve.

(b) **Number of students** :—A number of common costs, such as those on examinations, games, sports and recreation, medical facilities, scholarships and fellowships (not separately earmarked but being proportionate to number of students—the separately earmarked ones being included as part of direct costs of the faculty/college concerned) can be worked out per student and allocated on the basis of number of students.

It may, however, be noted that it would not be desirable to allocate all common costs (not directly related to any element/segment on this basis, as advocated by some. This would result in some faculties whose direct costs are small (such as humanities, social sciences, commerce etc.) and where number of students is large, having to bear very heavy share of the common costs. To quote one example in 1977-78; the direct costs of the faculties/colleges in Banaras Hindu University came to Rs. 4.02 crores and that on General Administration and Common Services came to Rs. 0.99 crores. The average per capita direct costs were Rs. 2,383 and they ranged from a low of Rs. 338 for the evening under-graduate college or Rs. 442 for the faculty of Commerce and Management to a high of Rs. 6,008 for Engineering and Technology and as much as Rs. 16,480 for Medical Sciences. The allocation of General Administration and Common Administrative Services on the basis of number of students would add Rs. 589 to each faculty/college. It would be seen that in atleast two cases (referred to above) the allocated overhead

costs would turnout to be much higher than their direct costs and so would be obviously unfair.

(c) **Direct expenditure :** Since the direct expenditure incurred on each faculty/college represents the number of personnel, consumption of stores and supplies, use of common services like electricity and water etc., maintenance and repair of buildings and equipment, they also to a large extent represent the attention needed by the general administration on that segment. The larger the number of employees, the larger the building space, the larger the consumption of laboratory and other supplies, more would be the need for general overall supervision, accounting and other common services. Therefore, the total direct expenditure could be a proper basis for allocation of costs general administration and common services. This would, in the above quoted example, allocate only Rs. 84 per student to the Evening graduate college where per student direct cost was Rs. 338 or Rs. 109 per student to the Faculty whose direct costs came to Rs. 442 per student. On the other hand, the share of Engineering and Technology and Medical Sciences would be Rs. 1485 and Rs. 4,073 respectively per student (instead of only 589 per student on the earlier basis).

If total direct expenditure turns out to be an unsatisfactory basis, part of the allocation may be on the basis of expenditure on staff (such as cost of accounting) or on staff and purchase of materials combined or partly on the basis of number of students (specifically identified items) and partly on the basis of direct expenditure (total or specific or partly both).

(iv) Per student costs

The per student costs are the most relevant ones to be computed. Yet, as discussed earlier, they pose the most difficult problems conceptual as well as ethical. They have to be worked out in several ways, involving different combinations of different items of cost for instance, there will be need to compute cost per student for different academic segments (or disciplines). First, all indirect and common costs will have to be allocated to the segments concerned on the basis of well defined principles and then the total costs—direct and indirect will have to be divided by the number of students. But this above would not serve much purpose. It will be further necessary to know the composition of this per student cost, such as (i) cost of manpower—teachers, technical and research staff, administrative officers, clerical and subordinate staff or (ii) cost of materials and services used.

This would involve determining the total common costs on these categories and then allocate them to the segments concerned.

Then again, within each segment, 'student' is not a homogenous unit on which the average expenditure is incurred. On certain category of students such as post-graduate, or those offering subjects requiring laboratory facilities the expenditure would be higher than on others. It may be worthwhile to determine the costs (by elements) separately

for each such category of student in each academic segment.

OTHER ISSUES

Besides the determination of per student costs and costs of various elements there may be needs for determining costs of different activities or those of specific projects. The other issues relate to sources of funds and accounting and reporting problems. These will be briefly mentioned here without going into the depth of these issues.

(i) Activity costs

There are several activities in any university—both academic and administrative, the separate costs whereof may have to be determined for various purposes. Mention may be made of academic activities like Examinations, Library Services, computer and sophisticated Instrumentation services or games, sports, N.C. C., N.S.S., recreation and other student activities. The administrative activities could be Electric and Water Supply, Sanitation and Health Services, Medical Services (for students, staff and public separately or for students and staff combined or for all the three) and the like.

(ii) Project costs

Besides on-going activities there are specific time-bound projects undertaken from time to time. For instance, during each five year plan, certain specific development projects are taken up such as, introduction of new courses, development of a particular specialisation, qualitative improvement of specific activities/facilities, establishment of a new school or centre of study time bound research extension or consultancy projects, construction of new buildings (or adding to existing ones). Each of these projects has to be closely watched, both in terms of progress of expenditure and benefits received. They may also involve use of specific project management techniques.

In both the above mentioned cases there would be problems of identification, allocation, segmentation and others akin to the ones mentioned in the first part.

(iii) Sources of funds

While, the bulk of funds in our Universities come from the central and state governments, there are some other sources also (which may in the aggregate amount to just 1 or 2 percent of the total expenditure). These include student fees, income from investments of various endowments, donations and income from properties and/or services. The determination of these may be necessary specially when cost-benefit analyses of certain activities have to be carried out, or when new sources have to be tapped.

(iv) Accounting and reporting problems

Determination of costs is not the only area posing conceptual problems. The entire system of educational institution accounting has to be examined and improved so that it may highlight the purposes served by different educational activities. What financial statements (operating statements, funds flow statements, balance sheets etc.) have to be prepared

and by which segments will depend upon the needs of the users of such statements. While the government legislatures, donors etc. represent the external users, the university management at various levels needs accounting information regularly for purposes of ensuring accountability, evaluating performance, watching progress etc., while the needs of external users are being attended to, those of the managements are being almost completely neglected. There is need for introduction of properly designed management control and information systems in large universities where sizeable expenditure is involved on a variety of activities.

The control and information system mentioned above will include watching the trends of costs as also comparing actuals with budgets on a continuing basis (rather than once or twice a year as at present) and also discussion with the people responsible for various segments activities.

To quote one example, it is not generally known that in the Banaras Hindu University, over a period of six years (1971-72 to 1977-78) costs have gone up as follows :

(i) The total revenue expenditure went up from Rs. 3.90 crores to Rs. 8.19 crores i.e. by 110.3% but the per student cost went up from Rs. 2,968 to Rs. 4,860, recording a rise of 63.7% only.

(ii) The total direct cost of faculties and colleges went up from Rs. 1.73 crores to Rs. 4.02 crores i.e. by 131.5%, the cost per student going up from Rs. 1,322 to Rs. 2,383 i.e. 80.3% only.

The lower per student cost increase is due to an increase of 28.4% in the number of students.

(iii) The General Administration and Common Services costs went up from Rs. 0.51 crores to Rs. 0.99 crores i.e. by 95.3% only (as compared to 131.5% in the direct academic cost). The per student overhead cost thus went up from Rs. 387 to 589 i.e. by 52.2% only.

The costs for other services have increased by widely different percentages for example ; the ancillary services cost went up by 116.7% or library services by 157.5%. There are similar variations when we look at the different segments for example, direct academic costs went up by 19% and 58% only in Education and Oriental Learning faculties respectively, but they went up by 190% and 166% respectively in Commerce and Management Studies and Medical Sciences as against the general average increase of 131.5% for all faculties/colleges. The variations in increase in per student costs will also be very large.

CONCLUSION

This paper has tried to pose certain conceptual and accounting issues relating to higher education. The issues have been identified and conceptual problems indicated. An exercise was undertaken to compute some costs, based on the analysis of actual expenditure in 1977-78 under the Revenue Budget only, of B.H.U. to illustrate the impact of adopting various concepts. The results are to be found in Appendix 'A'.

Appendix 'A'
Faculty wise Cost and Cost per Student in Banaras Hindu University in 1977-78

								(Rs. in lakhs)
Faculty	No. of students	Exp. on Academic Deptts. (Actual)	Genl. Admin. & Common Services	Genl. Admin & Common Services	Examination	Library	Fellowships and Scholarships etc.	University Services
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. Arts	3,514	33.30 (948)	20.70 (589)	8.23 (234)	3.74 (107)	6.02 (171)	3.26 (93)	26.12 (743)
2. Social Science	1,983	14.97 (755)	11.68 (589)	3.70 (187)	2.11 (107)	3.39 (171)	1.84 (93)	14.69 (743)
3. Science	2,657	74.93 (2820)	15.65 (589)	18.52 (697)	2.82 (107)	4.54 (171)	2.47 (93)	19.75 (743)
4. Engineering & Technology	1,741	104.60 (6008)	10.25 (589)	25.85 (1485)	1.85 (107)	2.97 (171)	1.62 (93)	12.94 (743)
5. Medical Science	575	94.76 (16480)	3.39 (589)	23.42 (4073)	0.61 (107)	0.98 (171)	0.53 (93)	4.27 (743)
6. Law	579	4.98 (733)	4.00 (589)	1.23 (181)	0.72 (107)	1.16 (171)	0.63 (93)	5.04 (743)
7. Performing and Visual Arts	373	13.21 (3542)	2.20 (589)	3.27 (877)	0.40 (107)	0.64 (171)	0.35 (93)	2.77 (743)
8. Oriental Learning and Theology	485	5.36 (1106)	2.86 (589)	1.32 (272)	0.52 (107)	0.83 (171)	0.45 (93)	3.60 (743)
9. Education	273	2.98 (1092)	1.61 (489)	0.74 (271)	0.29 (107)	0.47 (171)	0.25 (93)	2.03 (743)
10. Agriculture	624	21.56 (3455)	3.68 (589)	5.33 (854)	0.66 (107)	1.07 (171)	0.58 (93)	4.64 (743)
11. Commerce and Management	1,142	5.05 (442)	6.72 (589)	1.25 (109)	1.22 (107)	1.95 (171)	1.06 (93)	8.48 (743)
12. Women's College	1,313	20.79 (1583)	7.73 (589)	5.15 (392)	1.40 (107)	2.24 (171)	1.22 (93)	9.76 (743)
13. Evening College	1,495	5.06 (338)	8.79 (589)	1.25 (84)	1.59 (107)	2.56 (171)	1.38 (93)	11.19 (743)
Total	16,854	401.55 (2383)	99.26 (589)	99.26 (589)	17.95 (107)	28.82 (171)	15.64 (93)	125.29 (743)

(Contd. on page 198)

Universities and National Development

—Linkage with Environment :

University of Cochin—A case study

M. V. Pylee*

The University of Cochin is one of the youngest universities in the country. It was established in July 1971 and is hence in the eighth year since its coming into being.

The objectives of the university as stated in the Act of the Legislature of the State make it a distinctive type, basically different from the traditional teaching and affiliating type of university. The Act envisages to establish a university of a federal type for the development of higher education with particular emphasis on postgraduate studies and research in Applied Science, Technology, Industry and Commerce.

The University of Cochin is situated in the heart of a fairly large and fast developing industrial and commercial complex. The very fact that the University Act lays special emphasis on scientific, technological, industrial and commercial studies in this university is due to this proximity and the possibility for establishing intimate cooperation and collaboration between the university and industry in this region. No doubt almost all the full time courses and the few part time courses that the university offers now are related to the development in the industrial field. The university authorities, however, are of the view that what has been done so far touches only a fringe of the vast area of work which the university can and should undertake. It is with this object in view that the university has recently taken a decision to start a major programme of continuing education for the technical personnel working in the various industrial and government establishments located in the Alwaye-Cochin industrial belt. In the greater Cochin area there are over 5000 qualified technical personnel working in the various industrial establishments. The proposal is to provide the requisite re-education for them through a variety of continuing education programmes at graduate and post-graduate levels. It is part of a programme for which highest priority has been given by the Government of India in the Sixth Plan.

As a part of continuing education programme the university would also like to enter hitherto unexplored areas by offering specialised vocational job-oriented courses in management, commerce and law through correspondence courses. The need for providing non-formal education as an integral part of continuing education has been increasingly realised. In fact, with the publication of the report of the International Commission on the Development of Education (1972) the term life-long education is

gradually replacing the term continuing education. Recurrent learning not only enables society to cope with the explosion of knowledge, rapid scientific and technological advance and the progress side by side in agriculture and other economic areas but also it revitalises the intelligentsia to play a more effective role in regenerating the comparatively handicapped sections of society. This is one important field in which the university of Cochin would like to extend its services to a larger and larger number of persons in all age groups in wider and wider areas in the years to come.

In the context of the fast changing horizon of Science and Technology it is evident that an engineer/technologist should be familiar with the current state of the art so as to be able to use the most recent knowledge to tackle the problem on hand. This necessarily requires that he must update his knowledge by involving himself in self renewal at regular intervals. It will be agreed that such an updating from time to time would go a long way in meeting the challenge of manning the modern industrial complexes with the changed pattern of technology. While on the one hand the scheme of continuing education increases the employability of the individual, on the other hand it tends to bridge the communication gap which exists today between industry and the university. This is thus a truly need-based programme in keeping with the corporate objectives of the university.

With a view to assessing the feasibility of a programme of continuing technological education, a conference was convened by the university towards the end of August 1978. The conference was attended by delegates representing top and middle level management, supervisory staff and technicians from over forty leading industrial organisations and professional institutions in greater Cochin. The following proposals were discussed in detail at the conference.

1. Part-time post-graduate courses in appropriate subjects leading to M.Tech. degree.
2. Part-time post-graduate diploma courses.
3. Part-time degree courses for practising diploma holders.
4. Short term courses and workshops in specialised areas of immediate interests to the industry.
5. Correspondence courses.

There was enthusiastic response from the participants to all of the above. In addition to sponsoring candidates for the various programmes, experts from the industries agreed to provide faculty sup-

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port for these programmes to the extent possible. It was unanimously agreed that all steps be taken to start the programme by early 1978. As the first step a quick survey of the individual needs of the practising technical personnel and the institutional needs of the industry which employ them was proposed to be undertaken. The survey was conducted as suggested and 450 individuals and six institutions responded to a questionnaire sent out by the university. The response to the proposals in the questionnaire responded to a questionnaire was as follows :—

1. Post-graduate courses leading to M. Tech. degree 99
2. Post-graduate courses leading to Diploma .. 69
3. Degree courses leading to Tech B. degree.. 264
4. Short-term courses 94

Subsequently the university convened a two-day conference of outstanding persons in the fields of Humanities, Science and Technology from all over India to discuss development possibilities of the university in different areas of study and research. The group on continuing education identified the important areas in which the university could effectively participate in a programme of continuing education. At the same time the group on technology in their recommendations on the School of Technology has included a division of continuing technological education through the following resolution :

“Realising the long-felt need for providing continuing education programmes to the large body of professional and technical personnel employed in industries, public enterprises and government departments, the Committee recommends highest priority for such programmes in an organised manner through this division. The proposals in the report placed before the conference may be taken up on the basis of the findings of the survey of local needs which has already been undertaken by the university.”

It is also worth while to point-out in this context, the recommendations of the working group on technical education set up by the Ministry of Education and Social Welfare, in particular those relating to industry and institutional collaboration. It may also be noted that on the basis of the report of the working group, published in January 1978, the All India Council for Technical Education has decided that technical institutions should introduce flexible programmes of continuing education through part-time and full-time courses at all levels for serving personnel and that credit system with provision for multipoint entry in such courses be introduced.

It is under the above circumstances that proposals have been made for several programmes of continuing education in the field of technology at the University of Cochin. The attempt has been to evolve a pattern which is most suitable and appropriate from the point of view of the working personnel providing maximum flexibility. The primary aim is to impart knowledge in appropriate areas of technology to the serving personnel rather than merely to award higher degrees and diplomas.

The programmes of continuing education proposed in the field of technology are the following:

1. Part-time postgraduate courses leading to M.Tech degree
2. Part-time postgraduate courses leading to diploma (Tech.)
3. Part-time degree courses leading to B. Tech. degree
4. Refresher courses/workshops and other non-formal programmes
5. Correspondence courses.

The part-time post-graduate courses (leading to certificate, diploma and degree) for a graduate in engineering/technology will be of a modular pattern. Modular means that each subject comprising a branch of technology is presented sequentially in separate units. The flexibility afforded by modularisation permits candidates to select programme components best suited to their needs and time available. Each module will take 50 contact hours, spread over a month, during which the subject matter will be presented in about 30 lectures. Maximum use will be made of course notes and other teaching aids. Each module will be handled by members of the university faculty or experts from the industry, under the direction of a course Director. At the end of each module there will be tests conducted by the course Director for internal assessment. Questions for such tests may be preferably of the objective type and will cover the syllabus for the module. Successful candidates will be awarded a certificate of merit. A candidate who successfully completes one module is eligible for a certificate of merit.

A candidate who further passes three university examinations each consisting of 4 modules is eligible for the award of the diploma (Tech.). A minimum of 18 months will be required for taking the post-graduate diploma.

A candidate who proceeds further with an advanced course work of 4 more modules and a project work of one year resulting in a thesis, qualifies for an M.Tech. degree. A minimum of 3 years will be required by a graduate for taking a post-graduate degree. It may be mentioned in this connection that two years is the minimum period for full time post-graduate course in Engineering/Technology.

Draft regulations, subjects of study and scheme of examinations of part-time M.Tech. and part-time post-graduate diploma courses are given as *Appendix I and II* respectively. Part-time degree courses for practising diploma holders appeared to be the programme preferred by the majority of participants in the survey referred to earlier. This was to be expected in an industrial complex like the one in the Alwaye-Cochin belt which employs a large number of diploma holders. The future prospects of several of these employees are blocked for want of higher qualifications. The demand for a degree programme is therefore very genuine. Correspondence courses in technological subjects also appear to be attractive from the point of view of hundreds of technically qualified working people who are eager to improve their present qualifications. Correspondence courses in technological subjects also appear to be attractive from the

point of view of hundreds of technically qualified working people who are eager to improve their present qualifications. Correspondence courses in technological subjects are offered in atleast one university in India and it is becoming increasingly popular.

Organisation of the Modular Programme

A Board of Studies for Technology has been constituted immediately under the faculty of technology. The Board of studies consists of six members from the academic side and five members from the industry with due representation to the various disciplines. The core faculty for the programme is to be drawn from the existing divisions in the school of Technology of the university. Some of the other departments of the university might also help the teaching work.

Every effort, however, has to be made to secure maximum faculty support from qualified hands in the industry for they can bring to bear their rich experience in the field on the topics covered in the academic programme. The course Director will be responsible for organising and conducting each module. The part-time technological programmes proposed by the university form an ambitious part of the developmental plans of the university under the Sixth Five Year Plan. These along with the job-oriented part-time and correspondence courses proposed to be started soon and a fullfledged consultancy centre to assist the industrial establishments in and around the territorial jurisdiction of the university, are expected to go a long way in establishing a real linkage with the environment which is one of the cherished aims of the university. □

APPENDIX—I

Faculty of Technology M. Tech. Degree Courses (Part-time)

1. Conditions for admission

Candidates for admission to the M. Tech. degree course (part-time) shall be required to possess the following qualifications :

(a) Shall have passed the B. Tech/B.Sc. (Engg.) degree examination in the respective branch of any of the universities in Kerala, or an examination of any other university accepted by this University as equivalent thereto. Application from candidates from allied branches of engineering/technology, may also be considered after assessing their fitness for the course applied for.

(b) Should have at least 2 years' experience after obtaining the basic degree.

The candidates shall also satisfy the conditions regarding age and physical fitness as may be prescribed by the Syndicate.

Matters concerning admission procedures, fees, etc. will be prescribed by rules published in the prospectus for the course from time to time.

2. Course of study

The course work for the M. Tech. degree (part-time) shall extend over a period of 4 semesters with corresponding group of subjects for each branch of study and a further period of two semesters for project work and preparation of the thesis.

Each of the first three semesters shall consist of 4 modules of course work each module dealing with one of the subjects of study, in 50 contact hours spread over a period of about one month. The Semesters I and III shall be from January to May, and the semester II from July to November.

The IV semester shall consist of 4 modules of advanced subjects of study and shall be from July to November.

3. Eligibility for the degree

No candidate shall be eligible for the M. Tech. degree unless he has undergone the prescribed modules of course work for a period not less than 4 semesters in a University department/institution approved by the university and has passed the prescribed examination in all the four semesters and his thesis accepted.

4. Branches of study

A candidate may offer any one of the following branches of study and such other branches of study as may be instituted from time to time.

Branch I	:	Mechanical	a. Production	b. Design
Branch II	:	Electrical	a. Power systems	b. Electronics
Branch III	:	Chemical		
Branch IV	:	Civil		

The number of seats is limited to 30 in each branch.

5. Subjects of study and Scheme of examination

There shall be a university examination at the end of every semester (normally in June and December) in subjects as prescribed under the respective scheme of examinations. A candidate will be permitted to appear for the examination in a subject only if he has secured 50 per cent marks in the internal assessment for that subject.

6. Passing minimum and classification

A candidate who secures not less than 50 per cent of the marks in a subjects corresponding to a module at the university examination shall be declared to have passed the examination in that subject.

A candidate who qualifies for the degree passing all the subjects of the examination in the first appear-

rance and secures an aggregate of not less than 60 % of the total marks at the university examinations in all the semesters shall be declared to have passed the M. Tech. degree examination in "First Class."

All other successful candidates shall be declared to have passed the examination for the degree in Second class.

7. Revision of curriculum

The university may from time to time revise, amend or change the regulations, scheme of examinations and syllabi. In the case of students already undergoing the course, the changes will take effect from the beginning of the following semester after the changes are introduced and shall be applicable to the part of the course that remains to be completed.

APPENDIX—II

Faculty of Technology

Post-graduate Diploma Course in Technology (Part-time)

1. Conditions for admission

Candidates for admission to the postgraduate diploma course in technology (part-time) shall be required to possess the following qualifications :

(a) Should have passed the B. Tech/B.Sc. (Engg.) degree examinations in the respective branch of any of the universities in Kerala or an examination of any other university accepted by this university as equivalent thereto. Application from candidates from allied branches of engineering/technology may also be considered, after assessing their fitness for the course applied for.

(b) Should have atleast 2 years' experience after obtaining the basic degree.

The candidates shall also satisfy the conditions regarding age and physical fitness as may be prescribed by the Syndicate.

Matters concerning admission procedure, fees, etc. will be prescribed by rules published in the prospectus for the course from time to time.

2. Course of study

The course work for the diploma shall extend over a period of 3 semesters with corresponding group of subjects for each branch of study in common with the candidates for the M. Tech. degree.

Each semester shall consist of 4 modules of course work, each module dealing with one of the subjects of study in 50 contact hours spread over a period of about one month. At the end of each module there shall be a test conducted by the course Director. Certificate of merit will be issued to all successful candidates.

Semesters I and III shall be from January to May, and the semester II from July to November.

3. Eligibility for the Diploma

No candidate shall be eligible for the post-graduate diploma in technology—Dip, (Tech.) unless he has undergone the prescribed modules of course work for a period not less than 3 semesters in a university department/institution approved by the university and has passed the prescribed examinations in all the three semesters.

4. Branches of study

A candidate may offer any one of the following branches of study and such other branches of study as may be instituted from time to time.

Branch	I	—	Mechanical	a. production b. design
Branch	II	—	Electrical	a. power systems b. electronics
Branch	III	—	Chemical	
Branch	IV	—	Civil	

(The number of seats is limited to 30 in each branch)

5. Subjects of study and scheme of examinations

There shall be a university examination at the end of every semester (normally in June and December) in subjects as prescribed under the respective scheme of examinations. A candidate will be permitted to appear for the examination in a subject only if he has secured 50 per cent marks in the internal assessment for that subject.

6. Passing minimum and classification

A candidate who secures not less than 50 per cent of the marks in a subject corresponding to a module at the university examination shall be declared to have passed the examination in that subject.

A candidate who qualifies for the diploma passing all the subjects of the examination in the first appearance and secures an aggregate of not less than 60% of the total marks at the university examinations of the three semesters shall be declared to have passed the Dip. (Tech.) examination in "First Class."

All other successful candidates shall be declared to have passed the examination for the diploma in second class.

7. Revision of curriculum

The university may from time to time revise, amend or change the regulations, scheme of examinations and syllabi. In the case of students already undergoing the course, the changes will take effect from the beginning of the following semester after the changes are introduced and shall be applicable to the part of the course that remains to be completed.

Need for transformation of education stressed

Our present age in history which is witnessing for the first time the emergence of a global civilization is confronted with a challenge of unparalleled dimensions. The challenge lies in the fact that man's technology and social organization have far outstripped his spirit, resulting in a state of confusion and chaos, and a loss of moorings and directions. What we need now is a great renewal of the spirit of man to redress the balance of three interacting forces in the making of civilization. The worth and dignity of the individual person are threatened by the brute force and senseless behaviour of the impersonal mass of machine and society. Human values and aspirations cannot survive without

of democratization, the emerging concept of life-long education and the new opportunities provided by the revolutionary technologies of communication hold the promise of joining education and culture together in a new enterprise to liberate the spirit of man, to enrich his mind and to project and practise human values in the service of man and his humanity. The new goals and vistas of education recognize and value the integrity and diversity of cultures while seeking the universality of thought and reason and moving toward the common values and tasks of humanity, now confined to the spaceship earth struggling in a sea of mounting difficulties and perils as well as fantastic opportunities and hopes.

ned in the context of life-long education aiming at a fresh adventure in learning that is primarily directed to the development and sustenance of the learner's integrity as a free and creative person, and his independence of mind and spirit.

Along with many other nations, both affluent and poor, we are in search of a new pattern of education that can provide more balanced and relevant education, stressing the choice and practice of human values and relationships as well as the pursuit of knowledge and skills in order to enrich the art of living and the quality of life for all. A national policy of education is in the making and it must be forged by the active participation of all concerned. It is in this context that I offer a few remarks and suggestions from a life-time of experience and in a spirit of humility.

In order to bring about meaningful changes in our system of education we need to liberate it from some age-old habits and constraints. There is too much rhetoric from politicians, resulting in abundance of cliches and trite statements repeated in press and on platform. To this rhetoric is added the increasing hold of the bureaucracy over the management of educational institutions, and control of policies. There is not enough clear and informed thinking based on sound research and reliable data in a field involving the largest number of people as students, teachers and parents. The educated community, especially the teachers, do not play a dominant role in the making of educational plans and policies. The dead weight of inertia and conservatism holds sway in the educational establishments, blocking reform and experimentation. The craze for uniformity is vaguely and widely expressed without sufficient realisation of its implications and impracticability. In all this loud rhetoric and confusion of thought and action the needs of the learner are overlooked and educational programmes and curricula continue to be irrelevant and out of tune with educational objectives. I hope the new pattern of national education

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a fresh strengthening of their sources and the enrichment of their content. The urgent need for a renewal and resurgence of the spirit calls for a revolutionary transformation of education along with other developments and creations. The concept of life-long education arises from a growing crisis of contemporary civilization. Life-long education is required to fulfil the need of contemporary man to control, adapt and create the relevant technology and social organization for a new quality of life and for a meaningful quest for more effective and appropriate values of the spirit. At the same time, life-long education has become possible and has even entered the realm of realistic action owing to the human and technological developments of a global civilization.

In our times, the growing force

The education of the future providing for man's total life span must be oriented to his fulfilment as an individual person, as a creative worker, and as a member of his society, at national, regional and global levels. The educational programmes and processes should be related to the needs of contemporary man looking toward a fast-changing future. The integrity, ability and wholeness of man achieved through a new system of education is the most precious asset of the individual and his society, and it is this aim which needs now to be translated into a curricular content required by the emerging conditions and opportunities of the present time and the particular circumstances of each society. Such a curricular content of educational programmes and experience at all levels needs to be conceived and plan-

will remove such defects and distortions and develop adequate facilities and programmes of learning for mass education and general enlightenment in the context of life-long education. Along with the spread of science and technology, we have to develop cultural learning and the inculcation of human values, about which the distinguished Chancellor of this University has often spoken and pleaded eloquently. If the aim of education is to enable the learner to take charge of his life in a fast changing world, the building of character and moral resources of personality and the ability to learn from life's experience and environment are the most precious assets of any viable system and process of education. This calls for new orientations of the content of education which is far more important than structures and forms that claim too much of our attention. It also requires many linkages and fuller mobilisation of societal resources to offer several varieties of educational experience to the great diversity of learners who should learn at their own choice and pace to take charge of their lives and become more aware, more resourceful and creative. From the teachings of Gandhiji we have learnt the value of *Learning To Do* through learning by doing; at the beginning of this decade UNESCO'S International Report on Education highlighted the aspect of *Learning To Be* through life-long Education; and now, I believe, we are at the threshold of *Learning to Become* through a purposeful and integrated education of whole man, leading perhaps to a leap of transcendence from the contemporary human situation which we share with other nations and peoples.

The time has come for our great nation to fulfil its tryst with destiny by eliminating poverty, ignorance, disease and inequality, and build a good, happy and just society, cherishing the roots of its many splendoured culture and looking forward to the planetary society of the near future. Our traditional values can be well adapted to present

needs and emerging prospects. The resources of the nation, both human and material, are plentiful and rich in potentialities. If the task of national development is of stupendous magnitude, the challenge of action and achievement can also be truly relishing and rewarding. All that we need is a new will to change and strong, intelligent and united action to serve the dignity and humanity of man and enrich the quality of his life. (Excerpts from the convocation address delivered by Dr. Prem N. Kirpal, Former Secretary and Educational Adviser to the Govt. of India, at the Panjab University, Chandigarh.)

North Bengal Varsity convocation

Delivering the convocation address at the North Bengal University, Professor A. J. Dastur, Member of the Minorities Commission stressed the need for delinking degrees from jobs. She said while the right to education as a means to satisfy cultural, intellectual and economic needs was a fundamental right, the right to higher education was not an absolute privilege. It was contingent on the individual's capability to benefit and the country's capacity to bear the cost. Prof. Dastur said that we had not followed this sound principle with the result that there had been mushrooming of institutions of higher learning. There were very few educational institutions that could compare favourably with their counterparts in other countries. Prof. Dastur pointed out that those who took advantage of the facilities available in the field of education, science and technology belong to the elite and the middle classes. Higher education, by and large, had been beyond the reach of the poor. She said when efforts were made to mitigate discrimination at all levels and take forward those deliberately kept behind, the earlier beneficiaries opposed it. If it was a preferential treatment it was in the interest of social justice. The weaker sections of the community were not a liability but a responsibility of the society. Prof. Dastur said special efforts were needed to provide

education to these sections of the community and bring them forward to share the educational process.

Shri T.N. Singh, West Bengal Governor and Chancellor of the university called for adoption of a new strategy and creation of suitable infrastructure to encourage self-employment of youth coming out of universities. The Chancellor said the young men should not only run the national administration but take the responsibility to build a new India. Students and university administrators had a special responsibility in this respect. He advised the students to play their rightful role in society and utilise the opportunities of self-employment.

Professor P.K. Ghosh, Vice-Chancellor of the university outlined the development efforts and progress made by the university during the past few years. He said the centre for science studies and the centre for himalayan studies had been established at the university and were making good progress. The magnetic spectrography laboratory had been shifted from Durgapur to the University by the Atomic Energy Department. The employment-oriented courses introduced by the university would be science, technology, economics and commerce based. The Chancellor said the postgraduate diploma in tea technology would also be introduced at the university after clearance by the All India Council of Technical Education.

Kalyani Varsity convocation

Addressing the convocation at Kalyani University recently, Dr. Sushil Kumar Mukherjee, former Vice-Chancellor of Universities of Calcutta and Kalyani, said that poor quality of teaching was responsible for a decline in academic standards in universities. Failure on the part of teachers to maintain interest of their students in the classroom lectures attracted them to short-cut methods. Dr. Mukherjee said teaching and learning had remained as mechanical and listless as ever, during the recent years. Heavy rate of failure did not disturb the teachers and

the blame for the same was attributed to extraneous circumstances.

Shri T.N. Singh, Chancellor of the University and West Bengal Governor in his address urged for adoption of measures to reduce the increasing unemployment among youth coming out of educational institutions. He said the gap between the rich and the poor had been increasing.

The Chancellor conferred D.Sc. degree (honoris causa) on Prof. S. N. Dasgupta, the first Vice-Chancellor of the university.

Dr. Subimal Mukherjee, Vice-Chancellor of the university said that there was scope for streamlining and strengthening the administrative set up of the university, and suitable steps had been taken in this direction. He said that the total number of students on rolls of the faculties of Arts, Science and Education was 1497 against the teachers strength of 204.

About three thousand students received their degrees and diplomas at the convocation including 150 doctorate students.

AIIMS convocation

Prime Minister, Shri Morarji Desai delivered the seventeenth convocation address at the All India Institute of Medical Sciences, in New Delhi, recently. He said that different systems of medicine had their own utility and government wanted that benefits of these should be available to everyone in the country. Although modern system of medicine was making good progress, it was becoming expensive. Medical profession was a mission and doctors should be prepared to serve a patient in the most trying conditions. The Prime Minister said the Government was considering introducing health care as a subject in the education system.

Dr. Seewoosagur Ramgoolam, Prime Minister of Mauritius was conferred the honorary fellowship of the Institute on the occasion. He said the Institute was not only the premier Institution of Asia

but one of the five best in the world.

Dr. L.P. Agarwal, Director of the Institute outlined the activities of the Institute and said it had educated 828 graduates and 1489 postgraduates most of whom were serving the country. He said special research programmes had been geared up to investigate the efficacy of various plants and herbs.

Kurukshetra Varsity convocation

Shri Achyut Patwardhan, the eminent thinker and educationist delivered the sixteenth convocation address at the Kurukshetra University recently. He said that education could alone restore to man the freedom he had thrown away in the pursuit of material plenty. There had been an unprecedented explosion of knowledge in the field of science and technology and technological advancements which had resulted in extreme specialisation. The centres of higher learning have become mere guilds of specialists which lack an integrated comprehension for men and his environment. Shri Patwardhan said education had become a means for acquiring and earning a livelihood to such an extent that we have lost the sense of what it meant to live a rewarding life of excellence and harmony. The education should enable the man to grasp his material conditions, the natural surroundings, socio-economic trends and the political relationship of forces. He called upon the universities to inculcate under the demonstration of education in young men and women the capacity to cope with the complicated human problems. He desired the universities to take the challenge earnestly to re-educate themselves deliberately and help others to understand the significance and relevance of new educational process. The existing educational system did not help the youth to survey and measure their potentialities and use them properly. The theme of education should be to make young men and women aware of

the urgency to discover the most beneficial methods of utilising their capacities and use them for the welfare and happiness of their fellowmen. Education can be expressed as an insight into the right use of one's knowledge and capacity.

Shri H.S. Brar, the Chancellor of the University and the Governor of Haryana presided over the function and conferred Ph.D. degrees. Dr. Vikas Mishra, Vice-Chancellor of the university awarded degrees to other candidates.

Earlier, commandments from the Rigveda and Upnishad were recited for new graduates and degree-holders in Sanskrit, Hindi and English.

Einstein centenary

Speaking at a colloquium organised by the University of Bombay, Tata Institute of Fundamental Research and Marathi Vidyan Parishad in Bombay, Prof. V.V. Narlikar of the Institute said that Einstein's theory of relativity had ushered in a new era in scientific development and resolved some of the major problems of physics. He said that the theory had thrown overboard Newton's theory of space and time though many features of general relativity were not appreciated during his lifetime. The credit of undertaking the study of large scale structure of the universe through physical laws also went to Einstein. Prof. Narlikar said Einstein contribution to science was considerable and it was not everyday that such exceptional developments in science took place. He said the conclusions of a theory should be reviewed in light of new theories and the critical attitude was the characteristic of the best scientific activity.

Maharashtra Education Minister, Prof. S.S. Varde released a special number of 'Marathi Vidyan Patrika' on this occasion.

Dr. H. N. Sethna, Chairman of the Atomic Energy Commission in his presidential address said that Einstein had an 'institutional influence' on the destiny of man.

Plea for financial autonomy

The Vice-Chancellors of Universities in Punjab, Haryana and the Union Territory of Chandigarh in their informal meeting held recently in Chandigarh sought financial autonomy for their universities. The Vice-Chancellors resented the interference made by the government and other authorities in the functioning of the universities. They felt that the assistance should be made available in the form of block grants to the universities by relaxing the present rigid conditions which would bring financial stability to the centres of learning. The Vice-Chancellors favoured evolving suitable norms for promotion of teachers to achieve the uniformity. It was agreed to study the feasibility of introducing a self-promotion policy for teachers. The problems

better living room. He said the contradiction between the right of man and animal to live had to be solved to prevent the destruction of fauna from the earth.

Dr. D V. Urs, Vice-Chancellor of the University who presided said that their had been no interaction between the Zoo and the University in the past. He said Mysore University had the benefit of a forest university with three sanctuaries and a zoo around its campus. The Vice-Chancellor said that the state government had sanctioned a grant of Rs two lakhs for building a research wing in the zoo.

Prof. M.R. Rajasekhara Setty welcomed the guests and said there were only five universities in the country where genetics was taught in all its facets. He said that it was high time that they entered the field of genetics, the nature's encyclopaedia to achieve

should be formulated to improve the quality of teaching. It was felt that the objective of the examination should be to evaluate both academic and non-academic aspects of examinees. The grades obtained by the students in internal and external examinations should be indicated separately in the certificates.

The conference was attended by representatives from state departments of education, boards of secondary education, institutes at education, IITs, education wing of the defence services and the NCERT.

Delinking degrees from jobs

Dr. P.C. Chunder, Union Education Minister said recently in Jullundur that it was proposed to waive the requirement of degree for general type of jobs and prescribe it only for specialised fields. He said draft for the new educational policy had been framed and will be placed before the Parliament during the current session. The Education Minister said that the government was planning to introduce a period in the time table of schools and colleges for imparting moral education to the students so that they could contribute something to the community. Separate time would be allocated for activities for socially productive pursuits, cultural affairs, physical and moral education which promoted discipline.

Seminar on integrated rural development

Professor J. Raghotham Reddy, Vice-Chancellor of the Andhra Pradesh Agricultural University inaugurated recently the four-day seminar on Rural Development and Communication Policies organised at the University by the Indian Institute of Mass Communication and the International Institute of Communications. Prof. Reddy called on the experts to focus their attention on the urban-rural development, brain-drain from rural areas to urban areas and integrated rural development by using the profits of agriculture. He said there was a great need to study the contribution of agriculture and its resources

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of raising the standards of education and need for tackling students' indiscipline in a coordinated manner were also discussed at the meeting.

The meeting was attended by Dr. Amrik Singh of Punjabi University, Dr. Amrik Singh Cheema of Punjab Agril. University, Dr. K.S. Gill of Guru Nanak Dev University, Dr P.S. Lamba of Haryana Agril. University, Shri Hardwari Lal of Maharshi Dayanand University and Dr. Vikas Mishra of Kurukshetra University.

Mysore Varsity programme in wildlife biology

Inaugurating the Institute of Genetics and Wildlife Studies at the University of Mysore, Dr. Bruce Johnson, Professor and Head of the Department of Zoology at the University of Tasmania, Australia said that the man was destroying the habitat of animals in his relentless quest for

the closer interaction with zoo and sanctuaries.

National conference on examinations

The National Conference on Examinations held recently in New Delhi under the auspices of National Council of Educational Research & Training has not favoured the provision of grace marks in the different examinations. The conference was of the view that instead of provision of grace marks, scientific and statistical methods of scaling should be introduced in public examinations. It favoured research in examination methods so that it could be reoriented to bring about qualitative change in education. It was suggested that the examining body should prepare designs for setting balanced question papers. The paper setting should be left to those who were experts in evaluation and well versed in the subject. Question banks

to the non-agriculture sector. He suggested that services of the village teacher as an agent of communication could be utilised profitably. The urban educated community could work in the villages voluntarily to suit the rural environment.

Shri K.P.A. Menon, Additional Secretary in the Department of Rural Development in the Union Ministry of Agriculture and Irrigation in his keynote address stressed the need for effective well-trained and competent extension services to implement the integrated rural development programmes as outlined in the Sixth Five Year Plan.

JNU seminar on Gandhi and contemporary world

Prime Minister, Shri Morarji Desai inaugurated recently the seminar on 'Gandhi and the Contemporary World' organised by the School of International Studies, Jawaharlal Nehru University in New Delhi. He said Gandhi's relevance to modern times lay in the fact that he had long ago foreseen the world heading towards doom by harnessing science and technology for destructive purposes. Gandhiji always wanted science to be used for good of the world so that man became happier and not fearful. Gandhiji was not against the use of machines but wanted that while using machines men did not become mechanised. The Prime Minister said philosophers all over the world had come to the conclusion that Gandhi's ideals were the only way to save the contemporary world from destruction. He is relevant more today than ever before. Gandhi was a practical person, even remaining the greatest idealistic. He never said anything at any time unless he had practised it himself. The Prime Minister said this was the reason that nobody could refute Gandhi in argument.

Shri K.R. Narayanan, Vice-Chancellor of the university said Gandhian studies should form an integral part of the curriculum in schools and colleges and not remain confined to specialised institutions.

The three-day seminar was or-

ganised by the School of International Studies of the university.

New libraries inaugurated

Dr. P.C. Chuder, Union Education Minister inaugurated recently the Central Hindi Library, Regional Languages Library, Central Sanskrit Library and Indian Classics Library in Tulsi Sadan of the Bhawalpur House in New Delhi. All the four libraries have at present a collection of twenty-five thousand volumes. The Central Hindi Library will have books in Hindi as well as in Maithili, Dogri and Rajasthani. The Regional Languages Library has books in all the regional languages specified in the eighth schedule of the constitution. The Indian Classics Library contains all versions, translations and commentaries on the Ramayana, Mahabharata and Gita. The Sanskrit Library has a valuable collection of about four thousand volumes.

Asian games

As a step to improve the performance of sportsmen, the All-India Council of Sports has asked the national sports bodies to invite maximum number of foreign teams during the national or inter-state meets. The Council feels that our sportsmen can get much needed international experience if foreign teams are invited to participate in the nationals. The idea is to prepare our own players for the next Asiad where more Asian nations will be interested in playing on Indian soil. Instead of Indians going out for getting themselves geared up, our players can get the international experience in their country at lesser cost. The Council is of the view that we should concentrate on individual events where medal winning chances are always brighter.

Seminar on history of medicine

At the national seminar on the history of medicine in medieval India organised recently by the Institute of Medical Sciences of Banaras Hindu University, Dr.

N.R. Rai discussed the origin and development of pulse examination. He said that pulse examination was one of the practical and handy methods of diagnosis during the period 800 to 1700 A.D. The system was described in all ancient systems of medicine especially in Ayurveda and was used primarily for prognostic purposes. It gradually developed under the influence of the Unani system introduced in India by muslim physicians and the tantrika system of local origin. Dr. Rai explained that variation in movement of pulse indicated the ailment.

Dr. B.D. Tiwari of Lucknow Ayurvedic College dealt with the basic concepts of the medical system. He said that the ayurvedic system believed that the human body was composed of physical structure, senses, mind and soul. Unani system held that body was composed of four humours—phlegm, blood, yellow bile and black bile. He pleaded for exchange of knowledge and experience between the various systems of medicine.

Dr. S.K. Mishra of Gujarat Ayurvedic College said there was a great deal of integration between Arabic, Greek, Egyptian and other systems of medicine. This integration was checked during the British empire as a matter of policy.

The seminar was inaugurated by Dr. V. Ramalingaswami, President of the Indian National Science Academy.

AIIMS adopts a district for health care

The All-India Institute of Medical Sciences, New Delhi has adopted Churu district in Rajasthan for its model community health care services. Dr. L.P. Agarwal, Director of the Institute said in New Delhi recently that the highly specialised services of neuro-surgery and cardiovascular surgery would be improved at the Institute. The Institute would build two hospitals in the Rajgarh sub-division, Rajasthan where the services would be spread out to the block level and eventually every village would

have a trained health worker. The institute's efforts were to identify the right model that could be presented to the Nation. The other model tried by the Institute at Ballabhgarh in Haryana would also be evaluated. The Institute's clinical faculty would be actively involved in Churu district. The faculty members including senior professors will camp in the district for at least one month at a time. Dr Agarwal said that a nursing college would also be started by the Institute to develop a practically oriented curriculum leading to award of B.Sc. (Hons.) degree.

Arjuna awards

President Neelam Sanjiva Reddy at a function at Rashtrapati Bhavan presented the Arjuna Awards to sportsmen and sportswomen for their excellence achieved in their fields during 1977-78. On this occasion, Dr. K.S. Gill, Vice-Chancellor of Guru Nanak Dev University, Amritsar also received the Maulana Abul Kalam Azad Trophy from the President. The trophy has been awarded to the university for obtaining the first position in sports among Indian universities.

The President called for determined efforts to make 1982 Asian games to be organised in New Delhi a success. India had yet to win a place of honour in the world of sports and games. He hoped the selection of sportsmen would be made purely on merit without any extraneous considerations. The President said the awards would be an incentive for the sportsmen to improve their splendid achievement.

Dr. P.C. Chunder, Union Education Minister said on this occasion that the rules for Arjuna Award had been revised with a view to laying more stress on discipline along with excellence in sports and games. Although Indian standards were improving in some games we were far below the Olympic and Asian games standards. Dr Chunder said the government was conscious of the fact that India lacked adequate resources and had

not been able to provide proper facilities and sophisticated environments for sports development. The existing facilities in the country were not being properly utilised. It was possible to put up better performance even in the existing circumstances through well-coordinated, intelligently designed, better organised programmes and through closer collaboration and cooperation between sports organizations at all levels. The Union Minister said we should take care that we no longer dissipate our energies and display a better will to win in international competitions.

Mysore introduces postgraduate course in food science

The Senate of the Mysore University at its recent meeting approved institution of a two-year M.Sc. degree course in Food Science. The course will be conducted partly by examination and partly by research. Dr. K. S. Hegde, the new Vice-Chancellor of the university said that the members of the Senate had shown their concern at slow implementation of development work at the postgraduate centres at Mangalore and Shimoga. The Senate members felt that adequate representation had not been given to the weaker sections of the community.

Overseas students in Britain

Mr. Gordon Oakes, British Minister of State in the Department of Education and Science in his recent speech at an overseas students' welfare conference in Manchester said the British Government welcomed the participation of overseas students in the country's colleges and universities and noted real benefits to all concerned from their presence. He pointed out that the fee paid by an overseas student represented only about thirty per cent of the true cost of the course. The subsidy was well over £100 million a year in respect of overseas students. The department of education and science had issued two circulars of guidance to education authorities in London to help

them to assist students with application procedures and to cope with the many difficulties students encountered on their arrival in Britain. Mr. Oakes said their resources could not keep pace with the explosive nature of the demand. The number of overseas students had increased by over 150 per cent from about 32,000 to well over 80,000 during the last six years. Mr. Oakes said that his Government was making an effort to find ways that the subsidy should be made available to help selected, deserving groups of overseas students. He acknowledged the economic advantages of overseas students who provided a useful source of foreign currency. Many of them returned home to positions of influence where their familiarity with British goods, technology and procedures could be a vital factor when it came to developing their own overseas trade.

Symposium on developments in chemical engineering

Delivering the keynote address at the symposium on recent developments in chemical reaction engineering organised by the College of Technology, Osmania University, Dr. L.K. Doraiswamy, Director of the National Chemical Laboratory, said teaching in technology colleges should give equal emphasis to science and engineering as technology was acquired out of experience. He said universities should adopt a bold strategy of awarding Ph.D. degrees with the objective of encouraging original research. He felt that research was being concentrated in certain areas where the scholars were sure of getting quick results.

Professor G. Ram Reddy, Vice-Chancellor of the university inaugurated the symposium and said the teaching departments should set priorities for undertaking long-duration research projects to suit requirements of the society. He said infrastructure available with universities should be properly utilised and benefit of discoveries made elsewhere should also be applied to new research projects.

Professor P.S. Ramchandran, Principal of the College welcomed the guests and said the college would introduce M. Tech. course in Ceramic Technology from the next academic session.

ICMR awards to eminent medical teachers

Prime Minister, Shri Morarji Desai presented recently the Dr. B.C. Roy Awards to six doctors in recognition of their merit as eminent medical teachers. The recipients of the award are : Dr. (Mrs.) Santosh Chawla of Lady Hordinge Medical College, New Delhi ; Dr. P.K. Sethi of S.M.S. Medical College, Jaipur; Dr. P.K. Banerjee of Dr. B.C. Roy Post-graduate Institute of Basic Medical Sciences, University College of Medicine, Calcutta ; Dr. C. Balakrishnan of Postgraduate Institute of Medical Education and Research, Chandigarh; Dr. A.S. Thambiah of Medical College, Madras and Dr. P.S.R.K. Haranath of Institute of Medical Sciences, Osmania Medical College, Hyderabad.

HAU research projects

The Board of Management of Haryana Agricultural University at its recent meeting approved a budget outlay of Rs. 826.33 lakhs for the university. The allocation for research activities schemes has been stepped up from Rs. 195.95 lakhs to Rs. 335.96 lakhs. Rs. 156.85 lakhs have been provided for education in the constituent colleges of the university. The Board approved the setting up of some new departments after priorities had been laid down by the academic council of the university.

Dr. P.S. Lamba, Vice-Chancellor of the university said that the main thrust of agriculture was aimed at developing a task force after having identified the problems of the community and work towards an inter-disciplinary approach. Greater emphasis would be laid on research in dry farming particularly in pulses and oilseeds. The extension activities of the university will include requirements of the Krishi Gyan Kendras for which a budget allocation of Rs. 77.98 lakhs had been made.

Czechoslovak Government scholarships

The Union Ministry of Education and Social Welfare has invited applications on the prescribed forms for award of Czechoslovak Government Scholarships for post-graduate studies in the field of textile, chemical and glass technology and mathematics. First-class bachelor's degree holders in engineering/technology with at least two consecutive years' teaching or research experience in the subject field are eligible for the award. The details can be obtained from the Department of Education of the Union Ministry in Shastri Bhawan, New Delhi-110001.

Population education

Smt. Renuka Devi Barakataki, Union Minister of State for Education and Social Welfare, inaugurated the five-day seminar on the integration of population education in the National Adult Education Programme held recently in Bombay. The Minister said that population education was one of the significant aspects of the adult education programme. The NAEP was not merely a literacy programme but one which aimed at creating a social awareness and functional upgradation of the illiterate adult. The programme sought to bring about social change in the country.

Computer in Indian music

The University of Madras and the Sangeet Natak Academy organised recently a seminar on the application of computer in the study of Indian music. The objective of the seminar was to bring into focus the mathematical and scientific analysis of the structure of ragas, struthis and moorchanas by bringing together research workers in the field for presentation of their findings and discussions.

Dr. R. Srinivasan, Senior Professor of Physics at the University of Madras and convener of the seminar said that he had built up a data base consisting of 4,000 works of about 200 Carnatic music composers covering nearly 2000 ragas. The data base was a by-

product of his research involving computer application to music and musicology. He said the data base would give instant answers to questions like the various compositions of a given composer in a given raga and tala.

Approach to Gandhian studies

Speaking at the symposium on 'Approach to Study of Gandhi' organised by the Gandhi Bhavan of the Karnatak University in Dharwar, Dr. J.D. Sethi, Member of the Planning Commission made a plea for critical and dispassionate study of Gandhian approach to our problems. He said we had not utilised the thirty years since Independence to understand the Gandhian philosophy. If the study of Gandhian approach had to be relevant we should keep out of our minds any reverence for Gandhi. Gandhiji should be treated not as a saint but a moral and social scientist and a great emancipator. Dr. Sethi said the models adopted since Independence to tackle the socio-economic problems had failed miserably as serious attempt had not been made to adopt the Gandhian approach. Dr. Sethi said if the basic concepts evolved by Gandhi were given a practical shape these could offer solution to many of our problems. He urged the universities in India to undertake a serious study of Gandhian Philosophy.

Exchange of sports teams

India and the Soviet Union will exchange sports teams in view of the 1980 Olympics in Moscow. The protocol on cultural exchange programme signed recently provides for exchange of weightlifters, boxers, wrestlers, gymnasts and others.

Personal

1. Prof. E. G. Ramachandran has taken over as Director Incharge of the Indian Institute of Technology, Madras.
2. Dr. D. N. Borthakur has been appointed Vice-Chancellor of Assam Agricultural University.

A list of Doctoral Theses Accepted by Indian Universities

SOCIAL SCIENCES

Psychology

1. Basu, Amarendranath. Psychodynamics of orphan children. University of Calcutta.
2. Bhatt, Kantilal Dalpatram. Personality development of Kharwas of Saurashtra. Sardar Patel University.
3. Govatana, Adisai. A comparative study of creative thinking in relation to socio-economic status, school climate and classroom behaviour of High school students in Baroda City, India and Bangkok City, Thailand. M.S. University of Baroda.
4. Verma, Leela. A study of children's attitudes towards religiosity and their background factors. University of Bihar.

Sociology

1. Joshi, Balmukund Laxmanrao. Study of the impact of the Jayakwadi Irrigation Project on an affected village community. Marathwada University.
2. Rizvi, Baqur Raza. Economic organisation of the hill Korwa of Chhattisgarh, M.P. Nagpur University.

Political Science

1. Gaur, Mahendra. State decorations under Indian Constitution. Jiwaji University.
2. Singh, Ramashankar. Dr. Rammanohar Lohiya's political ideas as against their sociological springs. University of Bihar.

Economics

1. Jhala, M. L. Supply and demand aspects of edible oilseeds and oils in India, 1951-71. Gujarat University.
2. Ranganadhacharyulu, Atmakuri Venkata. Inflationary price trends in India 1956-57 to 1974-75: A theoretical and empirical analysis. Andhra University.
3. Shukla, Satish Kumar. Trade Unionism in Madhya Pradesh since 1950. University of Saugar.
4. Vyas, Pinakeen Surendra Prasad. Wage productivity relationship in Indore Division of Madhya Pradesh with special reference to sugar, engineering and textile industries. University of Indore.

Public Administration

1. Naidu, W. G. A study in depth of some aspects of the management of Heavy Electricals (India) Limited, Bhopal. Nagpur University.

Education

1. Ahuja, Malvinder. A study of effects of step-size, feedback and test anxiety on the performance in a linear programme on chemical action prescribed at Hr./Sec. level. Himachal Pradesh University.
2. Sofet, Shiam Lal. Construction and standardization of self-evaluation scale of teaching effectiveness of secondary teachers. Punjabi University.

Commerce

1. Begde, S. K. State budgetary allocation for higher education in Madhya Pradesh. Bhopal University.
2. Ghosal, Ambarnath. Financing of some major industries of West Bengal, 1955-60. University of Calcutta.
3. Gulshan, Satnam Singh. Corporate responsibilities with special reference to joint stock companies in India. University of Delhi.

Management

1. Wadehra, Basant Lal. Voluntary arbitration of industrial disputes. University of Delhi.

Home Science

1. Rai, Rajani Kaushal Prasad. Consumer problems and protection for middle class home makers in Nagpur. Nagpur University.

HUMANITIES

Philosophy

1. Manmadkar, Dadasaheb Narayanrao. Warkari Sampradaya: Tatwadnyana va sadyakaleen auchitya: Warkari sampradayaiche ayetihasek samalochyan. tatvadnyaper adhishtan ani vartaman kalateel mahatva. University of Poona.
2. Razia, Sultana. Sufism and Advaita Vedanta: A comparative study. University of Madras.

Language & Literature

Sanskrit

1. Bhandari, Manjula. A comparative study of the commentaries of Medhatithi and Kulluka Bhatta on Rajadharma section of Manusmriti. University of Delhi.
2. Dimri, Bhagwati Prasad. Khyativada in orthodox systems of Indian philosophy. University of Delhi.
3. Kailash Chandra. Indonesiaei Shiva Sanskrit granth bhuvan kosha. University of Delhi.

Maithili

1. Jha, Girija Nand. Maithili lok katha sahitya. University of Bihar.

Hindi

1. Chavan, Gajanan Pandurang. Ramvriksha Benipuri aur unka sahitya. Shivaji University.
2. Chawda, Deoram Rajabhai. Chhayavadottar Naya kavya chintan. D.Litt Nagpur University.
3. Dubey Vidyawati. Hindi ka adhunik Ramkavya, 1850-1978. University of Indore.
4. Krishnaji Rao, M. Structure of verb in Telugu and Hindi: A comparative study. Sri Venkateswara University.
5. Prasad, Satyadeo Narain. Vidyapati kee Mahesh Vanian. University of Bihar.
6. Sahaya, Shashi Prabha. Hindi upanyason (1910-1960) mein apradh, karm evam bhavna ka vishleshnatmak adhyayan. University of Bihar.
7. Singh, Uma Rani. Maithilisharan Gupta kee kavya kiritiyon kee kavya shastriya mimansa. University of Bihar.
8. Singh, Umashankar. Bharat vibhajan, seemasangharsh aur Hindi sahitya. D. Litt. University of Bihar.

Urdu

1. Ahmad Hussain Inayat Hussain. Daruttarjuma Osmania kee adabi khidmat. Marathwada University.

Marathi

1. Barve, Chandrashekhar Shankar. Marathi natak va Tendulkaranchi nataka. University of Poona.
2. Mehendale, Suhas Wasudeo. Keshavsutanche kavyatmak va laukik vyaktimahatva ani tyache parasper sambandha. University of Poona.
3. Mulay, Sakharan Vaman. Dnyanodayache vangmayeen ani sanskritik swarup, san 1842 te 1900. University of Poona.
4. Pathak, Yashwant Tryambak. Kirtansanstha: Udgam va vikas, Maharashtraacha sandharbhat. University of Poona.
5. Patil, Madhukar Sudan. Kaviman swarup va shodha: Dnyadeo tukaramanchya sandharbha. University of Poona.

Bengali

1. Chaudhuri, Satyajit. Abanindra—Nandantattwa. University of Calcutta.

Gujarati

1. Chhaya, J. R. Ballad in Gujarati folk literature. Saurashtra University.
2. Dalal, Rasiklal Thakordas. Hasyaras: Gujarati sahitya ma tane udbhavane vikas. University of Poona.
3. Jivrajani, J. V. Folklife of Saurashtra reflected in the folk songs edited by Shree Zaverchand Meghani. Saurashtra University.

Tamil

1. Subrahmonian, K. Parunkatal: A study. University of Kerala.

Telugu

1. Chowdary, B. Bhaskara. A critical study of Joshua's works. Sri Venkateswara University.

Kannada

1. Javali, B. C. Harihara kaviva stree patra darshan. Karnatak University.

Geography

1. Sahai, Bhagwan. Lower Chambal Sindh Doab: A study in agricultural land use. Jiwaji University.

History

1. Shah, S. C. Social life in the State of Vijayanagar. Gujarat University.
2. Venkatasubramanian, T. K. History of Tinnevely. 1600-1900 A. C. University of Madras.

Faculty	University Services	Furniture & Teaching aids etc.	Furniture & Teaching aid etc.	Expenditure on Hostels	Expenditure on Hospitals	Misc. Expenses	Faculty-wise cost per student	
							Basis: Col. 2,3,5,6,7,8, 10,12,13 & 14	Basis: Col. 2,4,5,6,7, 9,11,12,13 & 14
(0)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
1. Arts	10.39 (296)	4.53 (129)	1.80 (51)	2.98 (562)	—	0.74 (21)	101.39 (2885)	70.46 (2005)
2. Social Science	4.67 (236)	2.56 (129)	0.80 (40)	1.80 (562)	—	0.42 (21)	53.46 (2696)	33.70 (1699)
3. Science	23.38 (880)	3.43 (129)	4.04 (152)	7.25 (562)	—	0.57 (21)	131.41 (4946)	138.52 (5213)
4. Engineering & Technology	32.64 (1875)	2.25 (129)	5.75 (330)	0.09 (562)	—	0.37 (21)	145.94 (8383)	184.74 (10611)
5. Medical Science	29.57 (5142)	0.74 (129)	5.10 (887)	3.20 (562)	73.53 (12788)	0.12 (21)	182.13 (31675)	231.82 (40317)
6. Law	1.55 (228)	0.88 (129)	0.27 (40)	1.33 (562)	—	0.14 (21)	18.88 (2781)	12.01 (1769)
7. Performing and Visual Arts	4.12 (1104)	0.48 (129)	0.71 (190)	0.22 (562)	—	0.08 (21)	20.35 (5456)	23.00 (6166)
8. Oriental Learning and Theology	1.67 (344)	0.63 (129)	0.29 (60)	0.14 (562)	—	0.10 (21)	14.49 (2988)	10.68 (2200)
9. Education	0.93 (341)	0.35 (129)	0.16 (59)	0.11 (562)	—	0.06 (21)	8.15 (2986)	5.99 (2194)
10. Agriculture	6.73 (1079)	0.80 (129)	1.16 (186)	1.86 (562)	—	0.13 (21)	34.98 (5606)	39.08 (6263)
11. Commerce and Management	1.58 (138)	1.47 (129)	0.27 (24)	1.07 (562)	—	0.24 (21)	22.27 (2388)	13.69 (1199)
12. Women's College	6.48 (494)	1.69 (129)	1.13 (86)	2.46 (562)	—	0.28 (21)	47.59 (3625)	41.17 (3136)
13. Evening College	1.58 (106)	1.94 (129)	0.27 (18)	0.22 (562)	—	0.34 (21)	33.07 (2212)	14.25 (953)
Total	125.29 (743)	21.75 (129)	21.75 (129)	31.73 (188)	73.53 (436)	3.59 (21)	819.11 (4860)	819.11 (4860)

Notes: 1 Figures within brackets show the cost per student in Rupees.

2 In Col. 3, 5, 6, 7, 8, 10, 13 and 14, the per student cost has been calculated after allocating the total cost to different Faculties according to the number of students in respective Faculties, except in the case of Hostel Expenses (Col. 12), the total of which has been allocated according to Faculty-wise hostellers.

3 In Col. 4, 9 and 11 the per student cost has been calculated after allocating the total cost on the basis of the actual Faculty-wise expenditure on Academic Departments as given in Col. 2.

4 Expenditure on Academic Departments includes the Salaries of the teaching staff, non-teaching staff and lower subordinate staff, laboratory expenses, purchase of teaching aids, educational tows, office expenses, printing and stationery, etc.

5 Other University services include University Press, electric supply service, water service, Agricultural farm, health services, estates office, town committee. Bharat Kala Bhawan, Vishwanath Temple, etc.

President's Address

(Continued from page 181)

life has treated us, the vice-chancellors? It is too tempting to say that life has treated us unfairly. We have many disappointments to express, many complaints to make and many charges to press. But is that the whole story? Have we not been called upon to give leadership to our respective universities and, thus, pay a price in terms of personal wellbeing and mental tranquility? It is true that society has clearly defaulted in not defining our role more precisely. But what role do we give to ourselves? Do we act as gladiators or mediators or consensus-seekers? Do we feel that in a world where change is unavoidable we act as agents for change? But change for what? Is it merely purveying a set of solutions externally prescribed to be applied placidly and non-committedly? It appears to me that the crucial leadership that the job demands from us is to help create a truly academic community, out of the disperse ele-

ments and forces that bedevil the universities today. A community can develop only through shared experience, through unity in action and through a sense of identity. To do this, we must first have a proper theory of knowledge. Only knowledge that is not alienated from its origin and its world of practice becomes a blue-print for action. It is through this process that we escape from the tyranny of the formula, externally sponsored; and liberate ourselves from the curse, as Kach was cursed by Devayani, where we become mere purveyors of knowledge and not its enablers. We also need to develop a general theory of collective action which, in specific situations, provides the rationale for collective efforts towards the achievement of community goals. Leadership originates in our perception of this role and our willingness to discover self-reliant techniques, locally perfected. Our task is not a mere chore nor a static point in the flow of time. It is, as Toynbee said, 'a movement not a condition; a voyage not a harbour'. □

CLASSIFIED ADVERTISEMENTS

INDIAN INSTITUTE OF TECHNOLOGY KANPUR

KANPUR-208016

Advertisement No. 8/79

Applications are invited for the following positions in the Data Processing Centre of the Institute:

1. One post of Data Processing Officer in the Scale of Rs. 1100-50-

1600.

2. One post of Sr. Data Processor in the Scale of Rs. 650-30-740-35-880-EB-40-960.
3. One post of Data Processor in the Scale of Rs. 425-15-500-EB-15-560-20-700-EB-25-800.
4. Two posts of Punch Card Operator in the Scale of Rs. 260-8-300-EB-8-340-10-380-EB-10-430.

Minimum Qualifications & Experience and Duties to be Performed are as follows:-

Name of post	Minimum Qualifications/Experience	Duties to be performed
1. Data Processing Officer	i) M.A. / M.Sc. in Maths./B.Tech. ii) Knowledge of computer architecture and Operating systems. iii) Knowledge of CoBoL Programming iv) At least 7 years experience in CoBoL programming and business data processing.	He will be in overall charge of the Data Processing Section and report to the Deputy Director. For Administrative Data Processing he will report to Registrar and for Accounts Data Processing to the Registrar (Finance). He will be responsible for Programme Development in specific sections and taking new areas of application.
2. Senior Data Processor	M.Sc./Ist Class Graduate + 3 years programming experience	Will maintain and develop program, master files and detail files. Will check inputs and outputs.
3. Data Processor	Graduate and Diploma certificate as Punch Card Operator	Will check inputs and outputs from computer and will also punch data as required for various application programmes.
4. Punch Card Operator	Matriculation + 1 years' experience as punch card operator.	Manual upkeep of Data files and registers and key punching.

*N.B.:— One post for Schedule Caste and one post for Scheduled Tribe candidates are reserved in regard to vacancies mentioned at Sl. Nos. 3 and 4 above.

Posts are permanent and carry retirement benefits in the shape of CPF Scheme or CPF-cum-Gratuity Scheme or GPF - cum - Pension-cum-Gratuity Scheme as may be opted according to rules. The age of retirement is 60 years. During the first year, the appointment will be on probation.

Besides pay, posts carry allowances according to the Institute rules, which at present correspond to those admissible to the Central Government employees stationed at Kanpur. Higher initial pay is admissible to exceptionally qualified and deserving candidates. Candidates called for interview will be paid second class railway fare from the place of duty to Kanpur and back by the shortest route.

Applications for the post of Data Processing Officer/Sr. Data Processor/Data Processor must be made on prescribed form obtainable free of charge from the Registrar of the Institute by sending a self-addressed unstamped envelope of 25 cm. x 10 cm. size and for the post of Punch Card Operator should be made on plain paper, stating date of birth, qualifications, experience, pay and present scale of post now held and other particulars.

Applications for the post of Data Processing Officer/Sr. Data Processor/Data Processor should be accompanied

by an Indian Postal Order for Rs. 7.50 (Rs. 1.87 for S.C./S.T. candidates) and for Punch Card Operator/ accompanied by an I.P.O. for Rs. 3/- (Re. 0.75 paise for S.C./S.T. candidates) in the name of Registrar, Indian Institute of Technology, Kanpur.

Applications should reach the Registrar, Indian Institute of Technology, Kanpur-208016 on or before April 21, 1979.

HARYANA AGRICULTURAL UNIVERSITY

HISSAR

Advertisement No. 3/79

Applications invited for following posts. Higher start outstanding qualifications, experience and achievements. Benefits of Contributory Provident Fund and leave etc. according to University Rules. Applications of the candidates already in service must reach through proper channel upto the fixed date. Applications on prescribed form (obtainable free by sending self-addressed unstamped envelope size 23x10 cms. to Assistant Registrar (R), HAU, Hissar) accompanied by prescribed fee of Rs. 10/- in the form of Crossed Postal Order in the name of Assistant Registrar (R), HAU, Hissar payable at

Hissar Post Office, should reach Registrar by 24.4.79. The envelope containing application must be superscribed as "APPLICATION FORM FOR THE POST OF _____".

1. Principal College of Agriculture Kaul : (Rs. 1200-50-1300-60-1900)

Essential

(i) Second class graduate in any branch of study. (ii) Second class Master's degree in Basic Sciences or Agriculture. (iii) Ph.D. in any field of agriculture/basic sciences with five years experience of teaching/research/extension in the subject OR M.Phil in any field of agriculture/basic sciences with seven years' experience of teaching/research/extension in the subject.

Desirable

Ability to organise a department/college, and interest in co-curricular activities and sports.

2. Extension Specialist (Agril. Engineering): (Rs. 1200-50-1300-60-1900).

Essential

(i) Second class Bachelor's degree in Agril. Engineering. (ii) Second class Master's degree in Agril. Engg. (iii) Five years experience in extension/research/teaching in farm power and machinery and/or Soil & Water Management.

Desirable

(i) Ph.D. in Agril. Engineering/Training in Extension Education. (ii) Experience and capacity for planning and organising Agril. Engg. Extension Programme. (iii) Familiarity with local Agril. Engg. problems.

3. Animal Pathologist (Degnala Disease) (Rs. 1200-50-1300-60-1900)

Essential

(i) Second class B.V.Sc. & A.H. (ii) Second class M.V.Sc. in Vety. Pathology. (iii) Ph.D. in Vety. Pathology. (iv) Five years experience of teaching/research/extension in the discipline.

Desirable

Research experience in mycotic and mycotoxic diseases.

4. Senior Administrative Officer (Rs. 1100-50-1600).

Essential

(i) Atleast second class graduate from any recognised University OR atleast a master's degree from any recognised University. (ii) Ten years office experience of a University or any other teaching/research institution or Central/State Govt. office or Central or State Govt. undertaking, out of which atleast 5 years should be in a supervisory capacity of not less than class II rank or equivalent of the State Govt.

Desirable

(i) Post-graduation qualifications. (ii) Experience of working in an Agricultural University.

Note: Those who applied earlier, need not apply again.

5. Assistant Professor of Pharmacology (Rs. 700-40-1100-50-1300 - Assessment-50-1600).

(i) Second class B.V.Sc. and A.H. or equivalent. (ii) Second class Master's degree in Pharmacology. (iii) Ph.D. in Pharmacology or three years experience in Pharmacology.

6. Assistant Professor Veterinary Anatomy: (Rs. 700-40-1100-50-1300-Assessment-50-1600).

(i) Second class B.V.Sc. and A.H./B.V.A.Sc. (ii) Ph.D. in Veterinary Anatomy OR Second class M.V.Sc. in Vety. Anatomy with three years experience in teaching/research in Veterinary Anatomy.

7. Assistant Professor of Epidemiology (Rs. 700-40-1100-50-1300-Assessment-50-1600).

Essential

(i) Second class B.V.Sc. & A.H. (ii) Ph.D. in Epidemiology or Pathology/Preventive Medicine/Microbiology (including bacteriology)/Parasitology with specialization in Epidemiology OR second class Master's degree in Epidemiology or Pathology/Preventive Medicine / Microbiology / Parasitology with specialization in Epidemiology, with three years' experience of teaching/research/extension in Epidemiology/investigation of animal diseases.

Desirable

Training in Biostatistics.

8. Assistant Director Resident

Instruction: (For Ph.Ds Rs. 700-40-1100-50-1300-Assessment-50-1600) & for Non-Ph.Ds Rs. 700-1300).

Essential

(i) Second class Bachelor's degree followed by 2nd class Master's degree. (ii) Three years' experience of teaching/research/extension in an Agricultural University under the trimester system.

Desirable

(i) Knowledge of educational administration. (ii) Ph.D.

9. Assistant Professor SA & VC

Classes: (Rs. 700-40-1100-50-1300-Assessment-50-1600).

(i) Second class B.V.Sc. & A.H./B.V.A.Sc./B.Sc. (Animal Science). (ii) Second class M.V.Sc./M.Sc. (Animal Science). (iii) Three years experience in teaching/research/extension.

10. Assistant Professor Vety. Pathology (Rs. 700-40-1100-50-1300 - Assessment-50-1600).

(i) Second class B.V.Sc. & A.H. (ii) Second class Master's degree in Vety. Pathology with three years' experience in teaching/research/extension in Vety. Pathology or Ph.D. in Veterinary Pathology.

11. Assistant Acarologist: (Rs. 700-40-1100-50-1300-Assessment-50-1600).

(i) Second class B.Sc./B.V.Sc. Animal Science/B.Sc. (Agri.), (ii) Second class M.Sc. in Zoology/Parasitology/Entomology with specialization in Acarology, (iii) Ph.D. in Zoology/Parasitology/Entomology with specialization in Acarology, OR 2nd class M.Sc. in Zoology/Parasitology/Entomology with specialization in Acarology with 3 years' experience of teaching/research in Acarology preferably associated with parasitic mites in the capacity of a Lecturer/teaching/research associate.

12. Assistant Research Officer (Meat) (Rs. 700-40-1100-50-1300-Assessment-50-1600).

Essential

(i) Second class B.Sc. (An. Sc.)/B.V.Sc./B.V.A.Sc./B.Sc. (Agr.). (ii) Second class M.Sc. in Animal Breeding. (iii) Three years' experience of teaching/extension/research in Animal Breeding. OR Ph.D. in Animal Breeding.

Desirable

Experience/training in Meat hygiene.

13. Assistant Research Officer

(Physiology): (Rs. 700-40-1100-50-1300-Assessment-50-1600).

Essential

(i) Second class B.Sc./B.V.Sc./B.Sc. (Ani. Sc.)/B.Sc. (Dairying)/B.Sc. (Agr.) with A.H. specialization. (ii) Second class M.Sc. in Animal Physiology or in any other related discipline. (iii) Three years research / teaching / extension experience in the field OR Ph.D. in Animal Physiology.

Desirable

Experience / training in modern methods in investigation in Reproduction Physiology.

14. Assistant Cattle Breeder: (Rs. 700-40-1100-50-1300-Assessment-50-1600).

Essential

(i) Second class B.V.Sc./B.Sc. (An. Sc.)/B.Sc. (Agri.). (ii) Second class M.V.Sc./M.Sc. in Animal Breeding. (iii) Three years' experience in research/teaching/extension in Animal Breeding OR Ph.D. in Animal Breeding.

Desirable

Advanced training in Biological Statistics.

15. Administrative-cum-Accounts Officer (Rs. 700-40-1100-50-1300).

Essential

(i) Atleast second class Graduate or a Master's degree from a recognised University. (ii) Atleast 12 years' experience of working in a University/Educational Institution/State Govt./Research Institution of which atleast three years should be in a supervisory capacity as Superintendent or equivalent.

Desirable

S.A.S. or Higher Standard Examination of the University or Chartered Accountancy or Cost Accountancy or LL.B. examination from a recognised University or Institution.

16. Assistant Disease Investigation

Officer (Rs. 700-40-1100-50-1300-Assessment-50-1600).

(i) Second class B.V.Sc. degree. (ii) Second class M.V.Sc. in Epidemiology/Pathology/Bacteriology/Parasitology or Preventive Medicine with three years experience in Livestock/Poultry diseases OR Ph.D. in one of the above disciplines.

17. Assistant Professor (Foods & Nutrition): (Rs. 700-40-1100-50-1300-Assessment-50-1600).

(i) Second class B.Sc. (Home Sc.)/B.Sc. (ii) Second class M.Sc. in Home Science/Biochemistry with specialization in Foods & Nutrition. (iii) Three years experience in teaching/research/extension in Foods & Nutrition or allied subjects or Ph.D. in Foods & Nutrition

Note

1. For posts at Sr. No. 1, 2, 8, 11 to 14 & 17, one or more of the Essential qualifications relaxable for candidates with outstanding attainments/experience.

2. For posts at Sr. Nos. 3, 5, 6, 7, 9, 10 & 16, qualifications are relaxable if persons with requisite experience/qualifications are not available.

3. For post at Sr. No. 4, one or more of the essential qualifications relaxable in case of exceptionally qualified/experienced candidates.

4. Special weightage will be given to extension experience possessed by the candidates for posts in disciplines amenable to extension.

5. For Posts at Sr. Nos. 5 to 8, 10 to 14, 16 & 17, the persons who do not possess Ph.D. at the time of their selection, if selected, will have to obtain Ph.D. degree within a period of five years failing which their future increments may be stopped.

REGISTRAR

INDIAN INSTITUTE OF TECHNOLOGY KANPUR

KANPUR-208016

Advertisement No. 7/79

Applications are invited for a post of Medical Officer in Health Centre in the scale of Rs. 650-30-740-35-810-EB-35-880-40-1000-EB-40-1200+NPA on slab basis at the Indian Institute of Technology, Kanpur. The post is reserved for SC/ST candidate.

Qualifications & Experience

(i) Candidate should be M.B.B.S. from University recognised by Indian Medical Council; he should be registered with U.P. State Medical Council.

(ii) Minimum experience after qualification should be not less than three years, preferably of having worked in a hospital. Preference will be given to persons holding a post-graduate qualification.

Upper Age Limit : 45 years on March 1, 1979.

The post is permanent and carry benefits in the shape of CPF Scheme or CPF-cum-Gratuity Scheme or GPF - cum - Pension - cum - Gratuity Scheme as may be opted according to rules. The age of retirement is 60 years.

Besides pay and NPA, post carry allowances according to the Institute rules, which at present correspond to those admissible to Central Government employees stationed at Kanpur. The Medical Officer will be required to stay in the Campus for which a rent free and unfurnished residential accommodation will be provided in the Campus. Persons already in Govt. or Semi-Government Organizations should apply through proper channel. Candidates called for interview will be paid second class railway fare from the place of duty to Kanpur and back by the shortest route.

Applications should be made on the prescribed forms obtainable free of cost from the Registrar of the Institute

by sending a self-addressed unstamped envelope of 25 cm. x 10 cm. size. Applications accompanied by an Indian Postal Order of Rs. 1.87 from SC/ST candidates will only be entertained.

All the applications should reach the Registrar, Indian Institute of Technology, Kanpur-208016 U.P. (India) on or before April 21, 1979.

KARNATAK UNIVERSITY DHARWAD

Employment-Notification

Applications (seven sets) in the prescribed forms are invited for the below mentioned posts in the Postgraduate Departments and Constituent Colleges of the Karnatak University, Dharwad.

Application forms can be had from the Publication Department (Press Building), Karnatak University, Dharwad on payment of Rs. 2/- per form (Rs. 14/- per set) which should be credited to State Bank of India, Karnatak University, Dharwad and the challan towards the payment of the same should be presented.

Candidates desirous of obtaining the forms by post, should send a self addressed 28 x 12 cms. cover affixing Rs. 1.15 postal stamp along with the crossed demand draft for Rs. 14/- made payable to State Bank of India, Karnatak University, Account, Dharwad.

I. Post-graduate Department at Dharwad

(i) PROFESSORS

1. Botany (Plant Morphology and Morphogenesis).—One
2. Zoology (Biology of Reproduction).—One
3. Geology.—One.
- *4. Kannada.—One.
5. Marathi.—One.

(ii) READERS

1. French.—One.
2. Geography.—One.
3. Social Work (Community Welfare).—One.
4. Tamil.—One.
5. Kannada (Folk Literature).—One.
6. Foreign Languages. (Russian—One.
7. Hindi.—One.
8. Commerce.—One.

* The post of Professor of Kannada advertised already as a temporary vacancy under No. K. 10 (a) EST (T) ADVT/569 dated 16-9-1978, has now been advertised as a permanent post. Candidates already applied in response to the earlier Advertisement dated 16-9-78 need not apply again and their applications received on date, shall be considered.

(iii) LECTURERS

1. Botany, (Mycology, Ecology; and Angiorperm, Texonomy).—One.
2. Zoology.—One.
3. Bio-Chemistry.—One.
4. Geology.—One.
5. Psychology.—One.
6. Law.—Two.
7. English.—One.
8. Political Science.—One.
9. Music.—One.

II. Post-graduate Centre, GULBARGA

(i) READERS

1. Chemistry (Physical).—One.
2. Physics. (Applied).—One.
3. Microbiology.—Two.
4. Commerce.—One.
5. English.—One.

(ii) LECTURERS

1. Political Science.—One.
2. Microbiology.—One.
3. Economics.—Two.
4. Commerce.—Two.
5. Sociology.—One.
6. Hindi.—One.
7. Kannada.—One.

III. AT CONSTITUENT COLLEGES

(i) Karnatak Science College, Dharwad.

1. Lecturer in Chemistry. (Inorganic).—Two.
2. Lecturer in Zoology.—Two.
3. Lecturer in Zoology (Temporary).—one.

(ii) Karnatak Arts College, Dharwad.

1. Lecturer in Persian & Urdu.—Two
2. Lecturer in English.—Two.
3. Lecturer in Philosophy.—One.
4. Lecturer in Commerce.—Two.
5. Lecturer in Hindi.—One.
6. Lecturer in Economics.—One.

(iii) OTHERS

1. Curator of Museum.—One.
(Kannada Research Institute
Karnatak University, Dharwad).

(I) Scales of Pay in the Post-graduate Departments

1. Lecturer-Rs. 700-40-1100-50-1600.
2. Reader-Rs. 1200-50-1300-60-1900.
3. Professor-Rs. 1500-60-1800-100-2000-125/2-2500.

With allowances admissible as per University rules from time to time.

(II) Scale of Pay in the Constituent Colleges

Lecturer-Rs. 750-50-1000-60-1300-75-1525 with usual allowances admissible as per rules of the University from time to time.

(III) Scale of Pay of Curator of Museum. (K.R.I) (K.U.D)

Rs. 660-30-750-50-1000-60-1300, with allowances admissible as per University rules from time to time.

Qualifications for the Posts of University Lecturers, Readers, and Professors in the P.G. Departments in Arts, Social Sciences, Commerce, Science and Education.

(A) GENERAL

LECTURERS

- (a) A Doctor's degree or Research work of an equally high standard; and
- (b) Consistently good academic record with 1st or high 2nd Class (B in the seven point scale) Master's degree in a relevant subject or an equivalent degree of a foreign University.

Having regard to the need for developing inter-disciplinary programmes, the degrees in (a) and (b) above may be in relevant subjects.

Provided that if the selection committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard it may relax any of qualifications prescribed in (b) above;

Provided further that if a candidate possessing a doctor's degree or equivalent research work is not available or is not considered suitable, a person possessing a consistently good academic record (weightage being given to M. Phil. or equivalent degree or research work of quality) may be appointed provided he has done research work for at least two years or has Practical experience in a research laboratory organisation on the condition that he will have to obtain a Doctor's degree or give evidence of research work of equivalent high standard within five years of his appointment, failing which he will not be able to earn future increments until he fulfils these requirements.

valent high standard within five years of his appointment, failing which he will not be able to earn future increments until he fulfils these requirements.

Explanation

1. Candidates for being eligible for recruitment to the post of lecturers must have a 1st or high second class (B in the seven point scale) at the Master's level and for determining consistently good record, average of 50-55% may be expected at the two examinations prior to the Master's degree examinations.

READERS

Good academic record with a Doctoral degree or equivalent published work. Evidence of being actively engaged in (i) research or (ii) innovation in teaching methods or (iii) production of teaching materials.

About five years' experience of teaching and/or research provided that at least three of these years were as lecturer or in an equivalent position.

This condition may be relaxed in the case of candidates with outstanding research work.

PROFESSORS

An eminent scholar with published work of high quality actively engaged in research. Ten years' experience of teaching and/or research. Experience of guiding research at doctoral level.

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge.

Lecturer in Law : LL.M. with a First or High Second class at the Bachelor's Degree in Law.

Notwithstanding anything contained above, in suitable and deserving cases the conditions regarding the qualifications and experience etc. prescribed for the posts of Lecturers, Readers and Professors may be relaxed on the recommendations of the Board of Appointment.

Qualifications at Constituent Colleges, Dharwad

LECTURER

1st Class or 2nd Class Master's degree in the concerned speciality with three years teaching or research experience in the subject concerned,

Qualifications for Curator of Museum at K.R.I. K.U.D.

1. Essential Qualifications

- i) First or High Second Class M.A. in Ancient Indian History and Culture;
- ii) Ph.D. in Archaeology.
- iii) Training and experience in field of archaeological explorations and excavations, and ability to carry out research work independently.

2. Desirable. Knowledge of Epigraphy, with practical reference to Karnataka and Museum work such as acquisition, display, exhibition, etc.

ADDITIONAL REQUIREMENTS

For the post of Professors, Readers and Lecturers in the Post-Graduate Departments of the Univ.

1. Reader in Commerce : Specialisation in Marketing, Banking and Finance Organisational Behaviour and Industrial Dynamics, preferred.

2. Reader in Microbiology : Specialisation in Microbial genetics/Microbial ecology/Microbial taxonomy/Microbial

Physiology/Microbial Biochemistry, preferred.

3. Lecturer in Microbiology : Specialisation in Industrial Microbiology, preferred.

4. Lecturer in Music : Specialisation in Vocal Music, Instrumental Music, preferred.

Appointment to the posts of Professors and Readers in the Post-graduate Departments will be on a contract basis for a period of five years subject to other rules of the University. Contract may be renewed for a period not exceeding 5 years at a time subsequently, subject to the rules of the University, if the work is found satisfactory.

Appointments to the posts may be permanent or temporary depending upon the nature of the vacancy and the requirements of the University. In such cases, they will be on probation for one/two years according to the rules of the University.

Candidates selected for the above posts, may be posted in the beginning or at a later date to work either at Dharwad or at any of the Post-graduate Centres, viz. Gulbarga, Karwar, Nandihalli (Sandur) though the posts are shown as existing at a particular place at the time of advertisement.

Appointments in each category of the above posts will be reserved for the following citizens to the extent indicated against them :

I. (1) Scheduled Castes, as defined in the constitution of India—15%
(2) Scheduled Tribes as defined in the constitution of India—3%
(as specified in Karnataka State Government Order No. SWL 12 TBS 77 of 22nd February, 1977 and further amendments thereon if any.)

II. Other Backward Classes, viz.
1. Backward Communities—20%
2. Backward Castes—10%
3. Backward Tribes—5%
4. Special Groups—5%

N.B. The applicants belonging to the above categories (for whom reservation is permissible) should mention in their applications the name of the caste or tribe or community or group and enclose a certificate (s) as per proforma prescribed under Government of Karnataka G.O.No. DPAR 1 SBC 77, Bangalore of 4th March, 1977.

Applications received with the defects noted below may be rejected without further correspondence.

(1) Who are not in service and have posted the application on or after the last date fixed for receipt of the applications. (2) Who have not filled the columns in the applications pertaining to certain important items like qualifications, date of birth, attestation form etc. (3) Which are not accompanied by any certificates, marks cards. (4) Which are not in the prescribed form of this University in SEVEN SETS in each subject. (5) Who do not furnish the details of the subjects studied in the basic qualifying examinations while the qualifications prescribed indicates the subject requirements and neither this information is available in the certificates produced. (6) Who furnish information about the experience in the appropriate columns of the application but do not enclose certificates in support of the same, when experience is prescribed in the advertisement.

Applications should be sent by Registered post A.D. so as to reach the Registrar, Karnatak University, Dharwad-580003, not later than 23-4-1979.

Candidates will have to appear for personal interview at their own cost, if called for.

K.S. Amur
REGISTRAR

OSMANIA UNIVERSITY

HYDERABAD-500007, A.P.

Advertisement No. 6/1979

APPLICATIONS in the prescribed form, together with the registration fee of Rs. 5/- for post Nos. 1 to 4 and Rs. 2/- for post No. 5, are invited for the following posts in the University Service, so as to reach the undersigned on or before 30-4-1979 :

1. Professors of Business Management Rs. 1500-60-1800-700-2000-125/2-2500.
2. Readers in Business Management Rs. 1200-50-1300-60-1900.
3. Readers in Electronics & Communication Engineering—Rs. 1200-50-1300-60-1900.
4. Reader in Civil Engineering Rs. 1200-50-1300-60-1900.
5. Teaching Assistant (Business Management)—Rs. 325-525.

Age : Professors—Not more than 50 years. Readers—Not more than 40 years. Teaching Assistant—Not more than 30 years.

Note—1. Age limit does not apply to the employees of this University. 2. Relaxation in age to the extent of five years may be granted to candidates belonging to SCs, STs and BCs, in case of post No. 5. 3. Age relaxation can be considered in deserving cases.

25% reservations are made for Scheduled Castes, Scheduled Tribes and Backward Classes in case of post No. 5.

Application forms can be had from the Director, Dept. of Publications and University Press, Osmania University, Hyderabad-7, A.P., on payment of Rs. 4.50 for post Nos. 1 to 4 and Rs. 2.25 for post No. 5 in person or by money order or by a postal order, uncrossed, made payable to the Director and by sending a self-addressed envelope (11 1/2 x 26 1/2 cms.), duly stamped for ordinary or registered post.

A latest passport size photograph should be affixed on the application form.

Full particulars can be obtained on requisition from the Director, Osmania University Press, free of cost, by sending a self-addressed stamped envelope.

B. Ramchandra Reddy
REGISTRAR

LUCKNOW UNIVERSITY

Advertisement No. 5/Med/1979

A. Applications are invited from candidates possessing a graduate degree in Medicine, included in the Schedules of the Medical Council of India Act 1956 with a good academic record and post-graduate degree in the subject concerned, (i.e. M.D./M.S./Ph.D. D. Sc./F.R.C.S./M. R. C. P./M.R.C. O.G. or equivalent) for the following posts at the K.G. Medical College, Lucknow.

Reader in the Grade of Rs. 800-50-1050-EB-50-1300-50-1450 plus allowances as admissible under the rules.

1. One temporary Reader in Community Medicine in the Department of Social & Preventive Medicine. Candidates must possess three years teaching experience as Lecturer or in an equivalent post.

Lecturers in the Grade of Rs. 650-30-800-40-1000-50-1300 plus allowances as admissible under the rules.

2. One temporary Lecturer-cum-M. O.H. in the Department of Social & Preventive Medicine.
3. One temporary Lecturer in Cardiology in the Department of Cardiology.

Candidates must possess three years experience as Tutor, Registrar, Demonstrator, Resident or in an equivalent post.

B. Applications are also invited from candidates who possess a graduate degree in Dentistry (B.D.S.) or equivalent with a good academic record and postgraduate qualifications (M.D.S. Equivalent) for the following post.

4. One temporary Reader in Pedodontics in the Department of Dentistry in the grade of Rs. 800-50-1050-EB-50-1300-50-1450 plus allowances as admissible under the rules.

Candidates must possess three years' experience as Lecturer or in an equivalent post.

General

For purposes of qualifications required for the above post, the degree obtained in a subject taught in the Department which subsequently is constituted into a separate department, shall be deemed to be a degree in the subject concerned. For the newly constituted department. For posts in sub-specialities special training and/or experience in the sub-specialities concerned, shall be an additional essential qualification.

Relaxation in the prescribed qualifications may be made in exceptional circumstances in accordance with the ordinances.

No consulting/private practice is allowed but the incumbents will be given 50% of the pay as Non-practising Allowance subject to a maximum of Rs. 600/- p.m. on the condition that the total emoluments including the Non-practising Allowance will not exceed Rs. 2700/- per month.

It is not necessary to fill all/any of the advertised posts.

Applications on the prescribed form (available on request accompanied with a self addressed envelope of 10 cm x 13 free of cost from the office of the Registrar) with recent testimonials, publications, etc. should reach the Registrar, Lucknow University, Lucknow by April 22, 1979. Candidates who are in service, should send their applications through proper channel. Application forms to outstations will be sent upto April 10, 1979.

Corrigendum

In advertisement No. 3/1979 the designation of the post at Serial No. 1 is One temporary Reader in Ophthalmology (Retinal Surgery) and Not "One Reader in Ophthalmology (Retinal Surgery)". Applications received for the post will be treated accordingly.

R.S. Gupta
REGISTRAR

**HIMACHAL PRADESH
UNIVERSITY
RECRUITMENT BRANCH
SIMLA-171005**

Advertisement No. 5/79

Applications on plain paper under registered cover, along with a crossed Indian Postal Orders of Rs 10/- (Rs 5/- for ST/SC) payable to the Finance Officer, Himachal Pradesh University, Simla-171005 are invited for the following posts so as to reach the undersigned on or before 16th April, 1979.

**1. REGISTRAR
2. CONTROLLER OF
EXAMINATIONS**

Pay Scales

Rs 1500-2000 plus usual allowances as admissible under the University rules.

Essential Qualifications

Master's degree in any faculty with five years' experience as a Principal in a College affiliated to or maintained by the University.

OR

Teaching Experience as a Reader in a University, preferably with five years administrative experience.

OR

Master's degree in any Faculty with five years' experience as a Deputy Registrar or in an equivalent post in a University or Board of School Education.

OR

Master's degree in any Faculty, with five years' administrative experience in the Central or State Government Administrative Service (on deputation, if necessary).

OR

Master's degree of a recognised University or its equivalent qualification with at least 10 years administrative experience in a University or an educational institution.

**3. INFORMATION - CUM - PUBLIC
RELATIONS OFFICER**

In the pay scale of Rs 1100-1600 plus usual allowances as admissible under the University rules.

Essential Qualifications

1. M.A. in Hindi/English/B.A. with effective command of both Hindi and English.
2. A diploma in journalism or a Certificate in Mass Communication or Journalistic experience of 5 years.

Desirable

Preference will be given to candidates who have the knack and evidence of flair for persuasive writing in style.

**4. LABORATORY TECHNICIAN
(DEPARTMENT OF CHEMISTRY)**

in the pay scale of Rs 350-800 plus usual allowances as admissible under the University rules.

Essential Qualifications

M.A./M.Sc. II Class or B.Sc. 1st Class with three years experience.

OR

B.Sc. II Class with 5 years experience.

Candidates already in service should send their applications through proper channel. An advance copy, however, may be sent direct.

Candidates called for interview will have to come to the place of the interview at their own expenses and bring with them their original research papers, degrees and certificates etc. for verification.

The University reserves the right to negotiate with suitable person or persons, if necessary, who may not have applied.

The University also reserves the right to fill-up or not to fill-up the post or to call only selected candidates for interview. The number of posts likely to be filled may vary.

Candidates who have applied for the posts at Sr. No. 1 & 2 in response to our earlier advertisement Nos. 3/78 and 1/79 need not apply again. (Postal orders need not to be sent).

The candidates are requested to give the following particulars:

Name of the applicant, date of birth, address for correspondence, academic qualification: Giving percentage of marks in each examination from high school onwards, teaching/administrative experience with details of posts held, minimum salary acceptable and time required for joining the posts in case of selection, telegraphic address, if any and anything else worth mentioning which is not covered above.

D.C. Pant

**SECRETARY TO THE
VICE-CHANCELLOR**

**HIMACHAL PRADESH
UNIVERSITY
RECRUITMENT BRANCH
SIMLA-171005**

Advertisement No. 6/79

Applications on plain paper under registered cover, along with a crossed Indian Postal Orders of Rs 10/- (Rs 5/- for ST/SC) payable to the Finance Officer, Himachal Pradesh University, Simla-171005 are invited for the following posts so as to reach the undersigned on or before 16th April, 1979.

ASSOCIATE PROFESSOR (Reader) in the following subjects in the pay scale of Rs. 1200-1900 plus usual allowances as admissible under the University rules.

I. POLITICAL SCIENCE

II. PHYSICAL CHEMISTRY

Essential Qualifications

- (a) A First or High Second Class Master's degree of an Indian University or an equivalent qualification of a foreign University in the relevant subject or in allied subject with bright academic record.
- (b) Either a research degree of doctoral standard or published research work of high standard in the subject concerned in journals of repute.
- (c) About 5 years experience of teaching Post-Graduate Classes and/or research; and
- (d) Competence to guide research. Evidence of being engaged in making innovation in teaching methods and production of standard teaching material, will be

additional qualification.

Candidates already in service should send their applications through proper channel. An Advance Copy, however, may be sent direct.

Candidates called for interview will have to come to the place of the interview at their own expenses and bring with them their original research papers, degrees and certificates etc. for verification.

The University reserves the right to fill-up or not to fill-up the post or to call only selected candidates for interview. The number of posts likely to be filled may vary.

The University also reserves the right to negotiate with suitable person or persons, if necessary, who may not have applied.

The candidates are requested to give the following particulars:

Name of applicant, date of birth, address for Correspondence, academic qualifications; giving percentage of marks in each examination from high school onwards, teaching/research experience with details of post held, published research work, administrative experience or other experience, minimum salary acceptable and time required for joining the post in case of selection, telegraphic address, if any, and anything else worth mentioning which is not covered above.

D.C. Pant

**SECRETARY TO THE
VICE-CHANCELLOR**

**PUNJABI UNIVERSITY
PATIALA
CORRIGENDUM**

In continuation of advertisement No. 250/PRO/Estt./79, relating to the post of Professor of Zoology at this University, which appeared on February 15, 1979 issue of University News, it is hereby notified that besides specializations in Cell Biology, Developmental Biology and Animal Physiology, persons specialising in Parasitology would also be given preference for this post. Those interested may send in their applications within ten days from the date of the publication of this Corrigendum.

REGISTRAR

**SAMBALPUR UNIVERSITY
JYOTIVIHAR**

No. 8546/TDS Dt. 12.3.79

Corrigendum to advertisement
No. 2653/TDS Dt. 12.2.79

- (1) In item No. 3 (Lecturer), "One post in Oriya be added after the word "Statistics".
- (2) In the qualification for the post of Professors the following be added as (i) and (ii), (iii) and (iv) be re-numbered as (ii), (iii), (iv).
 - (i) At least a second class Master's Degree in the subject with a minimum of 55% of marks.
- (3) The last date for receipt of application for all the posts is extended upto 26.3.1979.

REGISTRAR

A.I.U. PUBLICATIONS

	(Rs.)
1. Universities Handbook—1979	150.00
2. Handbook of Medical Education—1979	12.00
3. Association of Indian Universities—History	50.00
4. Higher Education and Development	30.00
5. University Finance—A Statistical Profile	50.00
6. Enrolment in Higher Education—A trend analysis	20.00
7. Resource Allocation on Education—Research Studies	20.00

Bibliography of Doctoral Dissertations (1857-1970)

8. Social Sciences	50.00
9. Humanities	100.00
10. Physical Sciences	125.00
11. Biological Sciences	100.00
<i>Note : Also available in paperbacks in individual discipline</i>	
12. Social Sciences & Humanities 1970-75	150.00
13. Social Sciences & Humanities—1975-76	50.00
14. Natural & Applied Sciences—1975-76	90.00

On Examinations

15. Management of Examinations	35.00
16. Towards Better Questions	5.00
17. Monograph on Grading	5.00
18. Monograph on Question Banking	5.00
19. Monograph on Internal Assessment	6.00
20. Monograph on Test & Item Analysis	10.00
21. Monograph on Question Banking in English Language & Literature	6.00
22. Monograph on Practical Examinations	9.00
23. Research Abstracts—Parts I, II & III	each 6.00

Question Bank Book Series

24. Mathematics	35.00
25. Physics	20.00
26. Chemistry	30.00
27. Zoology	25.00
28. Botany	20.00
29. History	15.00
30. Geography	15.00
31. Psychology	25.00
32. Economics	25.00
33. Commerce	25.00
34. Political Science	22.00
35. Foods & Nutrition	25.00
36. Sociology	30.00

Sports & Physical Education

37. Handbook of Rules & Regulations for Inter-University Tournaments	7.50
38. Gymnastic Exercises for Men	5.00
39. Gymnastic Exercises for Women	5.00

*Address enquiries to:***Association of Indian Universities**

Rouse Avenue, New Delhi-110002

University lews

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A FORTNIGHTLY CHRONICLE OF HIGHER EDUCATION & RESEARCH APRIL 15, 1979



Prime Minister Shri Morarji Desai inaugurated the seminar on Gandhi and the Contemporary World at Jawaharlal Nehru University, New Delhi, recently. Dr. K. R. Narayanan, Vice-Chancellor of the University, Dr. Bimal Prasad and Dr. K. P. Misra are also seen in the picture.

**BIDHAN CHANDRA KRISHI
VISWA VIDYALAYA
P.O. MOHANPUR, DIST. NADIA
WEST BENGAL**

Advertisement No. Appt./1/79

Applications are invited in prescribed forms for the following temporary posts under different Schemes sanctioned by different bodies for implementation under the Viswa Vidyalaya in the scale mentioned below with the benefits of D.A. and other allowances as admissible under the rules.

A. HORTICULTURIST

(ONE POST) under A.I.C.P. on Coconut & Arecanut Scheme in the scale of Rs. 1200-50-1300-60 1900/-

Qualifications: Essential

(i) Consistently good academic record with first or high second class (B+) Master's Degree in Horticulture with specialisation in Pomology, following a degree in Agriculture; (ii) A Doctoral Degree in relevant subject or research contribution of equal merit. (iii) At least five years' research experience on tree fruits.

B. JUNIOR BREEDER

(ONE POST) under A.I.C.P. on Coconut & Arecanut Scheme in the scale of Rs. 700-40-1100-50-1600/-

Qualifications: Essential

(i) Consistently good academic record with first or high second class (B+) Master's degree in Horticulture Genetics & Plant Breeding with at least 2 years' research experience on breeding of Horticultural crops, following a degree in Agriculture; (ii) Doctoral Degree in relevant subject or research contribution of equal merit.

C. FIELD OFFICER

(ONE POST) under the scheme entitled 'Economics of Raising Cattle & Buffaloes in Krishnagar Areas' in the scale of Rs. 400-40-800-50-950/-

Qualification: Essential

(i) Master's Degree in Agricultural Statistics/Statistics or recognised equivalent qualification

OR

Master's Degree in Agricultural/Animal Husbandry/Dairying with at least one year's training in Statistics from recognised institution.

Desirable

(i) Administrative experience or experience extn. work in rural areas or experience in Statistical Sample Surveys.

D. RESEARCH ASSISTANT

(TWO POSTS) under A.I.C.P. on Coconut & Arecanut Scheme in the scale of Rs. 325-15-475-EB-20-575/-

Qualification: Essential

Consistently good academic record with first or high second class (B+) Master's Degree in Horticulture with specialisation in Pomology.

**E. FIELDMAN/FIELD ASSISTANT/
AGRICULTURAL OVERSEER/FIELD
EXTN. WORKER/F.P. ASSISTANT**

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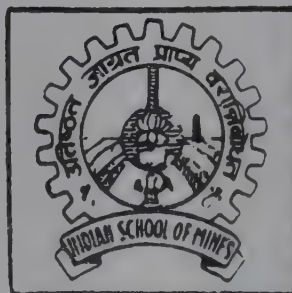
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S. P. VARMA
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Hony. Editor : ANJNI KUMAR

Universities and National Development

Linkage with Environment

Madhuri R. Shah*

At the very outset it may be pertinent to analyse the significance of the two terms involved in our discussion. The term environment is a multiordinal word and will have a significance in the context in which it is used. It will have, therefore, two important facets—the physical environment, and second, the social environment. The physical environment has today assumed a place of importance and has secured for itself a prestigious position as an inter-disciplinary subject. Many universities today offer courses in environmental studies. The juggernaut of technology has created numerous problems for the society. It is commonly said that technology itself must correct its own corruptive influences and this, therefore, has been the basis of introducing such inter-disciplinary subject to avoid the fate of ecocide. It is, therefore, necessary for the universities today to recognise, to foster and to advance through research the different aspects of environmental study which will be pluridisciplinary subject including life sciences, physical sciences—both physics and chemistry—social sciences and also architectural sciences, inclusive of town planning and city layout.

Environment, interpreted as social environment, has to take into account the society's placement as urban and rural, the various activities that society pursues as industries, business and professional practices and also its administrative units. When we, therefore, think of university's linkages with this facet of environment, we must take into account these various aspects into which social environment may be broadly classified.

It may be necessary at this stage to broadly define what is meant by linkage. Permit me to illustrate this point figuratively. In a silversmith's shop a huge horse-shoe magnet was hung from the ceiling as a decorative piece and, perhaps, for luck. This magnet fatally fell in love with a beautiful silver vase that was displayed on the shelf. The poor thing did not realise that with all the electro-magnetic lines of force that it could throw out towards its object of love it could not establish a link, and by the very nature its love was destined for frustration. A link can only be established, provided a polarity is established where we propose to bring about a linkage. It must be understood, therefore, that a linkage is not lassoing of an unwilling party. Linkage, therefore, is a two-way understanding which alone can bring to fruition the objective of such a linkage.

The interdependence of university and industry needs no arguing. The progress of much fundamental research in the university depends both on economic help from industries and industrially produced sophisticated instruments and apparatus on which all advanced scientific research is based. On the other hand, the future of industry depends upon availability of highly trained graduates not only for its day-to-day working but for innovative approaches on which the growth of industry finally depends. Unfortunately, this linkage of the university and industry has not been forged so very strongly in our country. There must be a planned and organised effort to bring about a closer contact with these two facets—the university and the industry. Equally well, there should be a greater association of the

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business houses with the university. Number of universities today offer courses which are oriented towards management and banking. If the university is thus giving the business houses a trained personnel, the reciprocity for such a contribution is not forthcoming. It may be suggested that the industrial and the business houses must voluntarily impose upon themselves out of their quantum of profits a small percentage towards the recurring expenditure of the university finance. I would like this to be made operative not through a government agency but on the voluntary bases of these spousers. Today universities are in the red as far as their financial position is concerned. The U.G.C. and other enlightened donors usually assist the universities on their non-recurring facets of expenditure. Many a time such a munificent donation finally becomes a white elephant for the university for its continual maintenance since the recurring expenditure is not forthcoming.

The university was born in the city—Salem, Bologna, Paris and Prague. However, some of the elitist universities, like Oxford and Cambridge, with their aversion to the evils of the city, established themselves outside such limits. But these universities whether in the city or outside its walls pursued their activities with an ivory tower isolation. Today, universities have moved into the market place and must elevate the status of the market place.

This concept of the link highlights the university's supreme obligation to wipe out adult illiteracy. Permit me to offer my few observations on the obligations of the university in this respect. The educational institutions at different levels of the educational process must totally participate in this national effort. Of such an effort, the university must have a new dimension added. If the students of the university be trained to participate in adult education, I think the teachers of the university should be trained to teach the fundamentals of democratic behaviour and conduct as well as of governance to those who conduct such duties at the grassroot of administrative process, the Panchayat Raj.

One has to explore as to what kind of linkage the university needs to establish with the professional environment comprising lawyers, doctors, engineers and technocrats. Such a linkage today is non-existent. I do not suggest that this link be a financial nature as a professional cess which has been imposed upon some of the states in our country. I will prefer this association to have an academic character. Such a character can be unfolded in different manners. Arrangements should be made for the graduate trainees in the different professions to be accepted for purpose of training in the pursuit of that profession. In few instances, the leading lawyers have what is known as deviling system. The medical training has a dimension of internship. But all such efforts are presently pursued in a fragmentary manner and a planned approach is lacking.

The last linkage which I would indicate with the environment is within the educational environment itself. Today, the schools and colleges and various polytechnics work in isolation of each other. There

is an urgent need to explore the school college complex and even further, the school-college-industry complex.

I have already mentioned that if the objective of the link is to be effectively achieved, there must be polarization with the facet of the linkage and one of the essential conditions for such a polarization for the university to achieve in the society in which it functions is, for the university to establish its credibility and accountability both in respect of its academic functioning and its financial disbursement. It may be a harsh but a true observation that today universities are completely in disarray. The curriculum construction stands in a confused state, the academic faculty vociferous with reference to their rights are oblivious with respect to their obligations and with such two adverse factors, the central figure of the educational system the pupil is completely in a puzzled state of mind. In this centennial year of birth of Einstein, permit me to refer to a few of his thoughts. He was a very strong supporter of 'free learning' by which he meant that any one desirous of pursuing his studies should not be required to produce as usual certificate of "general education", but that he must give evidence of his fitness to follow the reasoning of a discipline through a specially designed evaluating process. Today at my university, I am in a small measure experimenting with this idea by opening the doors to women who can give such an evidence and who are above the age of +21. There is another aspect which is indeed though of a revolutionary nature is pertinent in respect of educational system. Einstein indicated his deep interest in younger generation, whose development be considered threatened by nothing so much as incapable teachers and on this he suggested that the pupil be examined as little as possible, but the teacher so much, the more closely. Here is not the place to discuss in detail the curricular construction of which the highways and byways the students are led to their destined objective, because it is the finished products that we send out in the society are our living lines of force with the environment.

I have very broadly and cursorily referred to the few of the linkages that our university should establish with the environment. □

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Universities and National Development

—Internal Management of Universities

P. Sivalingam*

National development

The development strategy of our country is based on national policies regarding economics, land utilization, industrial location, agriculture, urbanisation, social housing, transportation, energy, environment, land-ceiling, rural development etc. The tasks involved in the implementation of the various development programmes are indeed gigantic and complex, particularly so when an integrated view has to be taken of the resources in men, materials and land with the object of optimising production and providing gainful employment to everyone. Plans and programmes for development must be implemented at the national, regional, district and village levels and these require planning and management talents of the highest order. The purpose of universities is to provide trained man-power to meet this critical management input and the task of educational institutions is to develop a talent pool that is needed by the collective society.

Review of university education in India

There are 112 (1976) Universities in India (the present number is 115), comprising 4500 colleges with 25 lakhs of students. Nearly 80.7% of our students are in the Arts, Science and Commerce streams, 9% in the Education and law-disciplines, 4.3% in the medicine, and a mere 5.2% are oriented to engineering and agriculture. Undue emphasis in the Arts courses (44.5%) and lack of emphasis on agriculture (1.2%) are disturbing factors.

Considering the emphasis on various aspects of university education, undergraduate education has assumed the major importance (88.5%) and emphasis on research is rather insignificant (0.7%). Post-graduate education is geared to 9.1% of our student enrolment. Only one out of every 260 citizens of India is in a position to obtain University education.

A more disturbing trend which is not readily apparent from mere statistical data is the preponderance of those activities in our universities which are oriented to benefit the privileged classes, who command nearly 80% of the goods and services generated in this country.

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Governance of universities—Review committee reports

The Kothari Commission (1964-66) and the Gajendragadkar Committee (1971) have studied the problem of governance of universities and the following observations deserve special mention.

(a) The function of a university today, is not only to enable students to attain excellence in knowledge but also to contribute directly to national development.

(b) A university stands for humanism, for tolerance, for reason for the adventure of ideas and for the search for truth. It stands for the onward march of the human race towards even higher objectives. If the universities discharge their duties adequately, then it is well with the nation and people (Jawaharlal Nehru, 1947).

(c) New challenges have been thrown to university education by the claims made by teachers and students, for active participation in the administration and academic affairs of the universities. This adds a new dimension to the problems of Governance of Universities.

(d) There is a growing feeling that Universities must come out of their 'ivory towers'. This involves a radical change in syllabi and structure of our courses.

(e) There should be greater contact between higher education and the problems of life and society,

(f) There is little chance of the Universities fulfilling the above legitimate expectations, unless higher education and research are given much higher priority in the national scheme of things, than at present. Expenditure on higher education and research should be considered not merely as an essential social service, but as an investment for the future with the possibilities of unlimited and rich dividends.

(g) The finances of Universities are almost entirely provided from public funds; the tuition and examination fees paid by the students do not amount to more than a quarter of the total budget. This being so, the universities and the Governments (State and Central) have to and should work in close collaboration.

(h) Thus the future university system should be sensitive to the changing conditions of society and

shifting pattern of thought and behaviour, and must be ready to meet new demands and requirements.

(i) The 'public image' of the Universities should be such as would inspire general confidence and respect for them, and promote and strengthen the community's trust in their work and capabilities, and faith in their future. University organisations should prove to the community at large that debate and dialogue, communication and exchange of ideas carried on freely, fearlessly and objectively, can solve all problems.

Gearing education to the needs of the society

The knowledge explosion is a fact of life. Every forty minutes, enough new information is being generated to fill a twenty-four volume encyclopedia. The task of communicating information in the academic disciplines is becoming untenable as a teaching function. Yet our present model of education is based on academic disciplines which forms too narrow a base on which to build society. When we attempt to cast every one in the same mould, we sell short both society and industrial human beings. It is time for some new models of education that are true to the integrity of the individuals as well as the needs of the society.

We might begin our reforms, by gearing education to the needs of the society by matching the cultivation of individual talents to social needs in a three dimensional model, patterned after skills needed in occupation. It is now well-known that three distinct skills, namely, working with data, working with people, and working with things, and combinations of the above are required for most jobs. The task of future education is to develop the students' greatest talent among these areas to the point of excellence and also preparing him for his environment by developing at least minimum competence, in the other two areas. The development of interpersonal skills would no-longer be left to extra-curricular activities and to chance, and they would also be required to develop basic competence in the manipulation of tools and materials. The advantage of this programme in our egalitarian future is that it recognizes individual differences and gives more people an opportunity to make real and valued contributions. The educational advantage of the proposal is that it permits us to establish realistic standards of performance.

Planning and management in universities—a British study

A planning and management study in British Universities was conducted in 1971 by the University Grants Committee of England. Some of the important recommendations of this Committee are worthy of adoption in Indian Universities.

(a) Management of Universities is not merely a technique, nor is it a manipulation of a range of techniques. *It is an art* which relies heavily on the exercise of human judgement; but it is becoming increasingly necessary to ensure that judgement is based on adequate information and modern *management science* is concerned with the systemisation

of that information. Thus the art, science and technology of management are interrelated and each is indispensable. Universities are expensive and vital institutions of a nation and scientific management on the lines of a corporate organisation is necessary for increasing the institutional efficiency whilst fulfilling the needs aspirations and hopes of its members.

(b) The challenge for University administration lies in building on the enterprise of the individual whilst ensuring harmony and coordinated progress of the institution.

(c) University structure and its processes should be integrated into a single and coherent management system. The committee structure, the group structure and the officer structure of the various Universities must act in consonance so as to maximise the resultant output in quantity and quality.

(d) Initiative and responsibility should be developed as close to the point of action as possible i.e. to the individual departments.

(e) Universities should take steps to evaluate their activities and performances periodically. Ideally all activities should be evaluated; there should be staff and student feedback on the effectiveness of teaching and curricula; research projects should have their outputs recorded and assessed; there should be feedback mechanisms from graduates and employers about their perception of the value of the University's courses in the light of work-experience of the graduates.

(f) Three levels have been suggested for University organisation, namely, the University authorities, the areas of study, and the units. In terms of academic groups the departments are at the unit level, the faculty is at area level and the Vice-Chancellor and the senate, syndicate, council and court are at the university level; a subsidiary level is envisaged for research centres and institutes of advanced study. This is a normal number of levels found in a typical University of 5000 to 6000 students; and the minimum necessary to follow the system of planning and management commended in this British Study. As a result, the length of the decision chains in the committee structure are relatively manageable and tiers and spans of control in the Officer structure acceptable. Incidentally, the span of control (horizontal interaction) is to be limited to nine in number.

(g) It should be recognized that the various activities of the Universities are inter-related. No individual or group can act effectively in isolation. Everyone is dependent on others in his work and in his pursuit of interests. If our Universities cannot foster growth and development in the younger-minds with a commitment to help the less privileged and act with a sense of co-operation what other institution can?

Recommended plan for action in the Sixth-Plan Period

National development in a highly populated and fast developing country such as India, requires massive, dynamic and time-bound programmes of action.

These programmes should be based on adequate planning and implemented with adequate managerial skills. Progress of a nation is ultimately based on availability of right information, knowledge of procedures and knowledge of technology at the grass root level. The dissemination of this knowledge should start from the universities and must gradually seep to the masses, through appropriate channels of information processing. The concept of "each one teaches one more" should be practised diligently.

Universities and rural development

Universities are both the products and the causes of changes in society. They cannot remain in isolation from the stresses and strains resulting from or involved in such change. In India the majority of our population lives in the rural areas. The impact of higher education and the advances made in science and technology have not yet permeated to the rural areas to the extent they should. It is therefore necessary that the Universities devote themselves to activities which are of immediate relevance to conditions existing at present in our villages. In this context the task of identifying technologies appropriate to our rural development must be given top priority in the activities of our Universities. The time has come when every university in the country should dedicate itself to this major task and participate more actively in such nation building activity.

Only one out of 260 citizens of India have access to University education. With the massive investments on infrastructure facilities such as land, buildings, equipment already made, it should be possible to educate at least twice the existing number, through non-formal education, continuing education, adult education and part-time classes, and education planned for community needs.

The areas of study and enrolment pattern in our Universities are heavily biased towards Arts, Science and Commerce streams and emphasis on post-graduate education and research is inadequate. A rethinking on the need for socially relevant research programme is of paramount importance.

One of the goals of university education is to develop the students' talents and to inculcate minimum levels of competence in working with things and interacting with people. The development of inter-personal skills should no longer be left to extra-curricular activities and to chance.

As a first step, the semester pattern of education and the scheme of full internal continuous evaluation should be introduced in all the courses of study. As a second step, the syllabi and curriculum should be modified for each area of study so as to have more social relevance. It would be worthwhile to introduce new subjects of study relating to rural development in addition to the conventional subjects. The concept of appropriate technology, study of environmental problems, recycling of waste water and utilization sewage effluents, study of non-depletable energy sources etc., should be given greater importance in our curriculum. Project work of the students should be oriented towards rural development.

Even though most of the concepts mentioned above are engaging the attention of the government, our Universities have not yet realigned themselves fully to this task. Students and staff alike should be made aware of this responsibility to the society and encouraged to take a keen interest in such activities.

Universities should encourage their staff to play a multitude of roles such as educating students, imparting training to practising professionals, participating in seminars and symposia, undertaking consultancy and research, participating in the developmental activities of the nation and helping in the day to day administration. All these activities should be officially recognized. Credit points may be awarded for the various activities of the teachers. Credits for each subject/semester taught by a teacher can be initiated on a nominal scale. Similar credits could be worked out suitably for various other activities. Every teacher should be required to generate sufficient number of credits/years, either through teaching only or teaching plus other combinations of activities. Some test of evaluation of teachers is inevitable and this can be left to the Academic Councils of the various Universities. This approach will require the submission of work-load budgets for each year, by the staff members and their approval by competent authorities of the university, sufficiently in advance, so that planned activity of a teacher could be ensured.

Reorganisation of our Universities for teaching and training in modern methods of management and for restructuring existing courses to satisfy well identified social needs is very vital.

The State and Central Governments must spearhead the reorganisation of Universities within the Sixth Plan period on a war-footing just as they are presently doing on the agriculture, energy, irrigation, industrial and rural development fronts.

Substantial financial allocations should be earmarked for University education. The true wealth of a nation is its people and the highest productivity is in human capital. Investment in education, will, in the ultimate analysis, pay the highest dividends in the form of production of leaders of integrity and infusing the people with a sense of commitment and devotion to social ideals. This represents a return of priceless value to the community.

Finally, Universities should function as corporate organisations, accountable to the society in the long run.

If the above simple tasks are undertaken on a priority basis, our Universities will be able to directly participate in national development in the very next decade. The management techniques, required for this kind of development are already available and what is lacking is the required will and dedication of the students, staff, university management and the Government. If the Universities desire to retain their legitimate responsibility of leading a country, then, they have very little choice except to act as above. Otherwise the gap generated due to inaction will be filled in by those who are more ambitious and determined to achieve their personal ends. □

Unit Cost of College Education

A case study of Hindu College of Delhi University

G. D. Sharma*

The cost is an important aspect of management and planning of the university. Even when one thinks about linking the university with the community one obviously thinks in terms of initiating some educational programmes which links the university with the society and the environment around them. Such programmes have some resource implications, in other words some costs. The study of unit cost therefore becomes important for efficient management of university as well as planning for any new educational programme or for that matter linking the university with the society. The affiliated colleges of the university although function independently so far as their budgets are concerned, yet they are very much integral part of the university. The effective linkage are established through these units only. Therefore, enquiry into the unit cost at the college level also becomes very important for the similar reasons.

Most of the cost studies conducted in India estimates only per student expenditure in aggregate form. Such studies normally do not unfold many aspects of costs, particularly the costs of various educational programmes/courses. The present study therefore attempts to examine unit-cost of education by courses/subjects in a college affiliated to Delhi University.

In brief, the objectives of this study are as follows:

To examine:

- Unit teaching cost per lecture, by courses and subjects
- Unit cost of education by courses/subjects
- Product unit cost i.e. the cost of producing a graduate
- Wastages due to failures and dropouts
- The size of class/department where unit cost is the least

On the basis of above it suggests some policy measures relevant to utilization of resources and for better institutional planning.

Methodology

The mathematical model mentioned below explains the steps taken for estimation of unit cost.

Mathematical Model

$$UC = \frac{TC}{S} \quad (1.1)$$

$$UCH = \frac{TC}{CH} \quad (1.2)$$

$$UCO = \frac{TC}{SO} \quad (1.3)$$

$$UCHS = UCH \times \frac{CH}{S} \quad (1.4)$$

$$W_t = UCD - UC \quad (1.5)$$

$$TC = W + TM + SU + EVU + SA + SMG \quad (1.6)$$

Where

TC = Total cost incurred by an educational institution

W = Teachers Salaries

TM = Expenses on teaching material (including laboratory and library expenditure)

SU = Salaries of Supporting Staff

EVU = Economics value of space and infrastructure used

SA = Cost of students amenities (Hostels and other facilities)

SMC = Students Maintenance Cost—Scholarships for maintenance

S = Number of students in a class/institute—i.e. size of an institution

CH = Credit Hours; being defined as number of lectures (one hour duration) delivered

SO = Students output

UC = Unit cost per student

UCH = Unit cost per credit hour

UCO = Unit cost per product

UCHS = Unit cost per student credit hours

W_t = Wastage per student

For examining the influence of size on unit cost we have the following form

$$Y = (x^1, x^2, x^3, x^4, x^5, x^6, \dots, x_n) U_1$$

where

y = Unit cost

x¹ = Credit hours per student

x² = Size of the institutions

x³ = Per student expenses on teacher, salaries and teaching material.

x⁴ = Per student expenses on salary of supporting staff

x⁵ = Number of credit units. Credit units being defined as reading and other facilities made available by the institution

x⁶ = Economic value of space and infrastructure used.

U₁ = Error term

The model presented here is comprehensive one for a detailed study on this aspect. The present paper is limited in the scope in the sense that it examines only recurring unit institution costs.

Data problems

In the process of collection of data, following problems were faced:

- The major hurdle in estimation of unit cost

*Research Officer, AIU.

was non-availability of data in an organized form and at one place. Most of the information/data for the purpose of this study are therefore collected from basic sources namely accounts registers, attendance/lecture registers, which are kept in a very scattered form.

2. As the general as well as salary accounts are not maintained according to departments/subjects or by activities, there was a problem of reallocation of expenses according to department and subjects.

3. Information regarding input and output that is students admitted and those who completed their graduation within stipulated time were not properly kept. Added to this was the problem of students who took fresh admission at every stage in 3 years degree course. Thereby making it further difficult to keep the parameters constant. Here also a great deal of efforts were made in tracing the progress of the students admitted in 1973-74 and passed out in 1975-76.

4. The number of lectures delivered are kept in aggregate form. In the case of subsidiary subjects separate details about the number of lectures delivered were available only for the year 1973-74. There was, therefore, some problem of estimation and adjustment.

The type of adjustment made and the way in which the problems solved are briefly mentioned below:

METHOD OF ADJUSTMENT AND ESTIMATION

Teaching cost

The teachers' salaries were initially taken from the salary account for each of the teacher in the respective subjects. While doing so due care was taken about the permanent and temporary staff and the staff on leave vacancy. Salaries of teachers of respective subjects were allocated to various courses/departments on the basis of number of lectures delivered by them to the students of various courses. That is to say if a lecturer of English had delivered some lectures to the students of Economics (Hons. Courses) they have been attributed to Economics (Hons.). Similar adjustment were made for other courses and the teaching costs were attributed to such courses accordingly. In doing so help of per lecture teaching costs in various subjects were taken. The per lecture teaching cost was an important variable which helped in solving many problems related to estimation of unit costs by subjects and courses.

Administrative cost

General administrative expenses are proportionally allocated on the basis of size of the department/course. The size was determined by number of students in each course/department. This means general administrative expenditures which were not specified to any department proportionally went to each of the departments/courses.

Laboratory expenses

The expenses on science laboratories and supporting staff in the laboratories were attributed according

to number of laboratory practical hours utilised by respective subject/course. Practical hours variable helped in allocating laboratory expenses in proportion to number of practical hours attended by students belonging to various subjects in science faculty.

Adjustment for lecture hours

In most of the cases data regarding the number of lectures delivered were obtained from the attendance register where number of lectures delivered in respective subjects were mentioned. These lectures were further attributed to respective courses/departments. In the case of subsidiary subjects as the figures were only available for one year i.e. 1973-74, for the subsequent years number of subsidiary lectures were assumed to be the same as that in the 1973-74. The proportion of such hours in 1973-74 to expected subsidiary lectures were worked out and the same proportion was applied for the subsequent years. This method accounts for any increase and decrease in subsidiary lectures as provided in the time table. As the data regarding practical laboratory hours were not available they were assumed to be the same as that of proportion of theory hours to the expected theory hours and the same proportion was applied to expected practical laboratory hours for the respective subjects.

Intake and output

The number of students admitted in the year 1973-74 and the number passed out in 1975-76 were studied by tracing the progress of students in various courses throughout three years' period. In this process wastages and stagnation at every level were also examined and number of students finally completing the graduation degree was worked out.

Details about the investment on building and other educational infrastructure were not readily available. Therefore, cost of equipment, building and other infrastructure which are being used by the students have not been estimated here. Any method of discounting of capital investment or alternative cost could not be worked out in the absence of such details. The analysis is therefore limited to recurring institutional cost.

Unit Cost Estimation

Per credit hour teaching costs

Credit hour, as stated earlier, is defined as lecture of 45 minutes duration delivered by the teacher. Per credit hour teaching cost has been worked out dividing the total teachers' salary costs in various subjects by number of lectures delivered by the faculty members of the respective subjects. The details regarding per credit hour teaching cost by courses and subject are given in *Table No. I*. Average per credit hour cost for all subjects/courses as on 1973-74 works out at Rs. 88. In 1974-75 and 1975-76 this cost increased to Rs. 181. and Rs. 124 respectively. That is to say for one lecture of 45 minutes duration institution spends around Rs. 124 on the salary of teachers. Per credit hour teaching costs differs from faculty to faculty and within faculty from subject to

subject. The detailed analysis by courses, faculty and subjects is presented below:

Arts and Humanities (Hons. Courses)

Average per credit hour cost in Arts and Humanities faculty in 1973-74 works out to Rs. 101. In 1974-75 and 1975-76 it increased to Rs. 103 and Rs. 109. There are variations in per credit hour costs in various subjects in this faculty. For the year 1973-74 the highest cost was for Philosophy (Rs. 343). This was followed by English (Rs. 136). The cost was the least for Sanskrit (Rs. 63). The pattern of per credit hour cost has remained more or less the same over three years, however the magnitude of cost has increased in almost all the subjects but for Sanskrit. Where it has decreased by Rs. 2 only. For details see *Table No. 1*.

Social Sciences

For social sciences average per credit hour cost in 1973-74 works out at Rs. 78. In 1974-75 and 1975-76 it increased to Rs. 101 and Rs. 119. Like Arts and Humanities there are also variations in the per credit hour cost for social science subjects. In 1973-74 the highest was for political science (Rs. 93). This was followed by Economics (Rs. 76). The cost was the least for Sociology (Rs. 50). Over three years the pattern of costs remained the same, however, the magnitude of costs increased in all subjects in this faculty also. In 1975-76 per credit hour costs for Political Science, Economics and Sociology was Rs. 129, Rs. 124, and Rs. 85 in that order.

Mathematics & Statistics and Commerce

As on 1973-74 per credit hour costs for Mathematics and Statistics and Commerce was Rs. 78 and Rs. 63. In 1975-76 for these two subjects the cost increased to Rs. 92 and Rs. 139 respectively.

Sciences

Average per credit hour costs for Science subjects for 1973-74 works out at Rs. 91. In 1974-75 and 1975-76 this cost increased to Rs. 105 and Rs. 160. The increase was very significant in year 1975-76.

Among Science subjects per credit hour cost in 1973-74 was the highest for Chemistry (Rs. 123). This was followed by Physics (Rs. 117). For Botany the cost was the least (Rs. 36). Over three years the pattern of cost remained the same, however, the magnitude increased. In 1975-76 per credit hour cost for Chemistry, Physics and Botany was Rs. 203; Rs. 182 and Rs. 70 in that order.

In sum on an average for services of teacher for a lecture of 45 minutes duration about Rs. 124 are spent by the institution. The per lecture service cost is higher in Sciences, followed by Commerce, Social Science and Arts and Humanities faculties.

Per unit institutional costs

Unit costs

The estimates of per unit institutional costs include costs incurred both on teaching and non-teach-

ing activities. Annual institutional unit costs for educating students in various faculties and subjects in the college under study is given in *Table No. 2*. As on 1973-74 the college spent Rs. 1618 per student per annum for providing instructions to them. This cost increased to Rs. 1962 in 1974-75 and to Rs. 2258 in 1975-76.

Per unit institutional cost varies from faculty to faculty and within faculty from subject to subject. The detailed analysis is presented below:

Arts and Humanities

As on 1973-74 average unit costs for Arts and Humanities honours courses works out to Rs. 1988. The cost was increased to Rs. 1891 in 1974-75 and to Rs. 2180 in 1975-76. Among the subjects in arts and humanities in 1973-74 the unit cost was the highest for Sanskrit (Rs. 3609). This was followed by English and Mathematics & Statistics. The least unit cost was for History (Rs. 1448). Over three years the pattern of unit costs in these subjects remained the same, however, the magnitude of costs changed. As on 1975-76 per unit institution costs was the highest for Sanskrit (Rs. 3315). This was followed by English (Rs. 2604). The least cost was for History (Rs. 1645). See *Table No. 2*.

Social Sciences

As on 1973-74 average unit institutional cost for social sciences works out as Rs. 1359. It increased to Rs. 1660 in 1974-75 and to Rs. 1891 in 1975-76. Among the subjects in Social Sciences per unit cost for political science was the highest (Rs. 1654). This was followed by Sociology. The unit cost was the least for Economics (Rs. 1219). The pattern of unit cost for these subjects remained more or less the same over three years however, the magnitude of cost increased to Rs. 2173, Rs. 2001 and Rs. 1686 respectively.

Commerce

For B.Com Honours course as on 1973-74 the per unit institutional cost was Rs. 985. It increased to Rs. 1487 in 1974-75 and to Rs. 1581 in 1975-76. Per unit cost in this course as compared to other courses was less.

Science

For science honours courses the per unit annual institutional cost as on 1973-74 works out at Rs. 1727. It increased to Rs. 2180 in 1974-75 and to Rs. 2482 in 1975-76. Among the subjects in this faculty in 1973-74 the per unit cost was the highest for Mathematics (Rs. 2127). This was followed by Chemistry and Botany. The cost was the least for Physics (Rs. 1554). The pattern of cost changed in this faculty over three years. In 1974-75 the least cost was for Zoology, that in 1975-76 it was for Botany. The position of Mathematics and Chemistry remained the same. However the magnitude of cost for all the subjects in this faculty increased. For Mathematics and Chemistry the costs were Rs. 3366 and Rs. 2807 respectively. (See *Table No. 2*)

General courses

Among general courses the per unit annual institutional cost for B.A. (Pass) course in 1973-74 was Rs. 1558. It increased to Rs. 2302 in 1974-75 and to Rs. 2643 in 1975-76. Per unit institution cost for B.A. (Pass) courses was higher as compared to B.A. & B.Sc. Honours courses.

The per unit cost for B.Sc. (General) course as on 1973-74 was Rs. 1893. It increased to Rs. 2271 in 1974-75 and to Rs. 3009 in 1975-76. Unit institutional cost for B.Sc. general courses was the highest among all the courses.

The per unit institutional cost for Fine Arts say Music was comparatively less. This was mainly because of the fact that major part of instructions in music is provided in the university.

In sum, the institution incurred about Rs. 2258 per student per annum for providing instructions in various Arts, Social Sciences, Sciences and Commerce subjects. The amount spent by the institution for instruction varies from faculty to faculty and within faculty from subject to subject. They also vary from honours and general courses. Per unit cost of instruction is higher in the case of general courses than in honours courses. The per unit cost is the least for B.Com (Honours) courses.

Unit cost of producing graduates

The unit cost of graduating students is examined by working out expenses incurred by the institutions during three years duration of course both on teaching and non-teaching activities. They are estimated with reference to students who were admitted in 1973-74 and passed out in 1975-76. Here two types of estimations are made. First pertains to the cost incurred over three years period on number of students admitted; the other is to the cost of producing a graduate i.e. effective cost of producing a graduate. While working out effective cost allowances for wastages due to failure and drop outs have been given.

The average unit cost for three years' graduate degree course works out at Rs. 4772. That is to say on an average Rs. 4772 per student are spent by the institution for three years' degree courses. As on an average due to failure and drop out Rs. 706 per student are lost, the effective cost of producing a graduate works out to Rs. 5478. For details see Table No. 3. This cost varies from faculty to faculty and within faculty from subject to subject. A detailed analysis of the same is given below :

Arts & Humanities

Average unit cost for three years' honours courses for this faculty works out to Rs. 5814. The effective average cost is estimated at Rs. 6616. That is to say on an average due to failures and drop out Rs. 802 per student are lost in this faculty. Among the subjects in this faculty the per unit cost is the highest for Sanskrit courses Rs. 1269. Although there are no wastages in this subject yet the cost is very high. This may be due to the fact that very small number of students choose this subject but minimum cost for providing instruction have to be

incurred. This results in high cost for this subject. The per unit cost for Hindi and English was Rs. 6293 and Rs. 6017 respectively. The effective cost for Hindi works out at Rs. 7699 and that for English Rs. 6800. That is to say a sum of Rs 1406 and Rs. 783 per student are wasted away in these subjects. The least cost is for History (Rs. 4314). The effective cost for this subject works out at Rs. 4805. Thus Rs. 491 per student are wasted away in this subject.

Social Sciences

For this faculty average unit cost for three years honours degree course works out at Rs. 4134. On an average due to failure and drop out Rs. 795 per student are also lost away in this faculty. Thus effective cost increases to Rs. 4929. Among the subjects in this faculty the cost is the highest for Political Science (Rs. 4905). The effective cost for it is estimated at Rs. 5666. Thus about Rs. 760 per student are wasted away in this subject. Per unit cost for Economics was Rs. 4097. About Rs. 737 per student are also lost in this subject. This increases effective cost to Rs. 5666. The cost was the least for Sociology (Rs. 3221). The wastage per student in this subject was relatively higher i.e. Rs. 922. The effective cost for this subject thus increased to Rs. 4143.

Commerce

For commerce per unit cost for three years honours degree course is estimated at Rs. 3220. Here Rs. 432 are wasted due to failure and drop out. This increases effective cost in this subject to Rs. 3653. As compared to other faculty the per unit cost in this faculty was the least.

Sciences

Average unit cost for three years honours degree course in sciences works out at Rs. 4562. On an average about Rs. 452 per student are wasted in this faculty. This raises effective cost to Rs. 5014.

Among the subjects in this faculty the highest cost is for Mathematics (Rs. 8191). As Rs. 106 per student are wasted away in this subject, the effective cost increases to Rs. 8297. This is followed by Chemistry (Rs. 5252) and Physics (Rs. 5190). The least was for Botany (Rs. 1704). The effective costs for these subjects works out Rs. 5844; Rs. 5909 and Rs. 2297 in that order.

General courses

For B.A. (Pass) courses, the average per unit cost for three years degree course is estimated at Rs. 6084. On an average Rs. 1262 per student are wasted away in this course. Thus it increases the effective cost to Rs. 7345. For B.Sc. (General) courses unit cost works out to Rs. 5346. On an average Rs. 2171 per student are wasted away in this course. This increases effective cost to Rs. 7517. Wastages and effective cost in this course as compared to other courses is the highest.

In sum per unit cost of producing a graduate honours courses is higher for Arts and Humanities. This is followed by Science and Social Sciences. The unit cost is the least for Commerce, Honours course.

However, cost for graduating students in general courses say B.Sc. (General) and B.A. (Pass) is higher than in honours courses. For B.Sc. general courses the per unit cost is the highest.

Size-cost relationship

As in the case of industry it is expected that per unit cost in education is also least at a size where resource input are fully utilized. Accordingly we tried to find out the size (defined in terms of students) of class/course where unit cost is the least. This aspect was examined by the statistical techniques of simple, log and non-linear regression. Although cost was found to be related with the enrolment, yet because of small number of observations and heterogeneity of courses definite conclusion about the size where the cost is the least could not be drawn. However, we have drawn a scatter diagram for Arts, Humanities, Social Sciences and Commerce Honours courses. These courses are homogenous in nature to a great extent. The scatter diagram revealed that cost is higher in the courses where number of enrolment is smaller than 40. The cost decline as the enrolment size increases, exception being courses with 68-70 number of students. This is however again indicative of the nature of curve, than definite answer to the issue under study. Some definite conclusions are expected to be reached with large number of observations.

Table I
Per Credit Hour, Teaching Cost, by Faculties and Subjects
1973-74-76

	1973-74	1974-75	1975-76
Arts/Humanities			
English	136.78	133.59	145.91
Hindi	67.30	80.97	80.29
History	89.32	115.81	103.73
Sanskrit	62.73	36.39	61.97
Philosophy	343.92	267.39	345.05
Average per unit cost	101.08	103.50	109.23
Mathematics & Statistics*	78.42	80.56	92.34
Average per unit cost	78.42	80.56	92.34
Social Sciences			
Economics	75.61	105.19	123.62
Political Science	92.99	123.99	128.86
Sociology	49.77	54.22	88.01
Average per unit cost	77.56	100.38	118.60
Commerce	63.27	129.67	139.32
Average per unit cost	63.27	129.67	139.32
Sciences			
Physics	117.18	138.19	203.29
Chemistry	122.58	124.94	182.18
Botany	23.36	46.76	70.21
Zoology	33.18	34.46	78.71
Average per unit cost	91.31	105.87	160.15
Average per credit hours (All subjects)	88.15	101.68	124.30

*This subject is common for both Arts and Science Faculties.

To sum up :

(a) That model of unit cost estimation covers all the aspects of costs. But due to data problem, the scope of the study is limited to the recurring institutional costs. The problems faced in the process of data collections suggests that there is a need for recasting the budgeting format of the colleges on the lines of functions/activities. Here programming, planning and budgeting system (PPBS) might be helpful.

(b) That per unit institutional cost is higher in B.A. and B.Sc. general courses as compared to honours courses. Institutions need to plan their general courses such that the cost for general courses is reduced.

(c) That per unit institutional cost for Sanskrit and some of the Language (Honours) courses are relatively higher. The costs may be reduced if such courses are organized in collaboration with two or three colleges situated in the closer vicinity.

Table II
Per Unit Cost, By Courses and Subjects, Hindu College
1973-74-76

	Total per unit cost 1973-74	Total per unit cost 1974-75	Total per unit cost 1975-76
B.A. (Hons) Arts/Humanities			
Sanskrit	3608.98	3110.53	3314.59
English	2362.22	2197.32	2603.78
Mathematics & Statistics	2100.55	2150.97	2185.12
Hindi	1721.91	2057.03	2010.94
History	1448.47	1513.37	1645.08
Average per unit cost	1988.25	1890.63	2180.26
Social Sciences			
Political Science	1653.56	1931.99	2173.74
Sociology	1229.64	1728.91	2001.30
Economics	1218.66	1440.13	1685.63
Average per unit cost	1359.24	1660.24	1891.29
B. Com. (Hons)	984.71	1486.76	1580.68
Average per unit cost	984.71	1486.76	1580.68
B. Sc. (Hons)			
Mathematics	2126.50	2879.78	3365.83
Chemistry	1741.65	2268.78	2807.37
Botany	1704.45	1967.92	2197.57
Zoology	1656.22	1765.97	1991.84
Physics	1553.94	1680.86	1877.14
Average per unit cost	1727.20	2180.30	2481.67
B.A. (Pass)	1557.89	2302.39	2647.53
Average per unit cost	1557.89	2302.39	2647.53
B. Sc. (General)			
Group B with Physics	2598.71	2784.58	3676.85
Group B without Physics	2377.79	2379.75	3270.98
Group A	1636.22	2172.22	2719.34
Average per unit cost	1893.13	2270.83	3009.77
Fine Arts			
Music	612.67	316.78	757.68
Average per unit cost	612.66	316.78	757.68
Average per unit cost (All Subjects)	1617.73	1961.83	2257.53

(d) That a good deal of resources are wasted due to failure and drop out. This could be avoided by introducing some kind of counselling and coaching courses for the students. (See Appendix A).

(e) That per lecture cost seems to be very high. This is partly because of the fact that the actual numbers of lectures taken are always 20-30% less than prescribed in the time table (See Appendix B) Perhaps this cost could be brought down by reducing the gap between actual number of lectures held and the number planned.

(f) Although no clear cut size of class/course is observed where the unit cost is the least, yet the study reveals that classes/courses with enrolment smaller than 40 are uneconomical.

It may be concluded that the analysis suggests that how and where economies can be effected in the use of resources. When one thinks of linking university with the community one thinks in terms of initiating some courses with class-room as well as practical training at the graduate level. The analysis is useful in working out the resource implications for courses that link the university with the community and the environment. □

Table III
Per Unit Cost for Three Year Degree Course Wastage And Effective Costs, by Faculties and Subjects
Hindu College 1973-74-76

	Per Unit Cost of Graduating Students	Per unit wastage	Effective Cost of Producing Graduates
Arts/Humanities			
Sanskrit	12358.78	—	12358.78
English	6017.80	782.50	6800.30
Hindi	6293.46	1405.71	7699.17
Mathematics & Statistics	1317.89	1317.89	—
History	4314.17	491.22	4805.39
Average per unit	5814.37	801.62	6615.99
Social Science			
Sociology	3221.66	921.61	4143.27
Political Science	4905.49	760.31	5665.80
Economics	4097.14	737.47	4834.61
Average per unit	4133.61	794.95	4928.56
B. Com (Hons)	3220.55	432.63	3653.18
Average per unit	3220.55	432.63	3653.18
Science (B. Sc. (Hons))			
Mathematics	8191.33	105.74	8297.07
Chemistry	5251.63	592.17	5843.80
Zoology	1656.22	225.85	1882.00
Physics	9190.23	719.20	9909.43
Botany	1704.46	592.17	2296.63
Average per unit	4561.89	452.04	5013.93
B. A. (Pass)	6083.5	1261.58	7345.15
Average per unit	6083.57	1261.58	7345.15
B. Sc. (General)			
Group B with Physics	2598.71	—	2598.71
Group B without Physics	7880.42	—	7880.42
Group A	5705.78	2171.04	7876.82
Average per unit	5346.17	2171.04	7517.21
Average per unit	4771.81	706.37	5078.18

There was only one student and he failed

Appendix-A
Percentage of students failed/droppedout to total students admitted, by courses & subjects
Hindu College 1973-74-76

Course	Dropout within 3 months %	Failed/ droppedout at end of the course %
B. Sc. (Hons)		
Physics	28.57	36.36
Chemistry	24.19	54.34
Zoology	4.34	13.63
Botany	4.76	5.00
Mathematics	25.00	5.88
	21.24	30.87
B. Sc. (General)		
Group A	25.00	63.63
Group B without physics	5.26	—
Group B with physics	4.76	—
	16.30	35.71
B. Com. (Hons)	12.00	37.20
B.A. (Pass)	3.44	88.46
B.A. (Hons.) Arts/Humanities		
Sanskrit	20.00	—
English	20.68	34.78
Mathematics & Statistics	—	—
Hindi	25.00	58.82
History	7.69	30.43
	17.44	38.23
Social Sciences		
Political Science	13.33	40.00
Sociology	7.69	65.00
Economics	31.81	48.27
	20.00	50.00
All Subjects	17.75	40.50

Appendix-B
Percentage of lectures held to total lectures planned by courses and subjects
Hindu College, 1973-74-76

	1973-74	1974-75	1975-76
B.A. (Hons)			
Economics	60.43	62.32	60.77
English	67.41	69.56	63.62
Mathematics	55.64	43.04	35.79
Sociology	53.75	68.86	77.28
Pol. Sc.	74.56	73.59	82.11
History	56.22	54.21	59.48
Sanskrit	62.73	72.98	83.90
B. Sc. (Hons)			
Botany	171.42	76.35	62.06
Chemistry	57.89	70.16	59.90
Mathematics	55.64	63.91	59.63
Physics	66.66	72.89	61.30
Zoology	166.50	101.97	83.25
B.A. (Pass)			
History	68.67	79.59	77.87
English	53.83	66.47	60.91
Political Sc.	63.50	66.37	77.01
Hindi	46.93	50.76	41.57
Economics	52.95	59.35	54.67
Philosophy	39.08	60.15	53.64
B.Sc. (Gen) Group A			
Physics	51.97	73.15	75.61
Chemistry	79.55	96.30	78.57
Mathematics	50.17	46.55	62.24
All Cour	63.21	65.14	62.41

Need for national perspective to higher education

The universities naturally reflect the characteristics of the social systems of which they are a part. Bombay University is no exception. Being a city university, it reflects more sharply the stresses and strains of life in a large industrial city. These tensions, in the present phase, are not the inherent weakness of an industrial society; nor are they the usual conflicts between value systems that one normally associates with the consequences of development. Our problems, in fact, are those of removing the obstacles on our road to social and economic development. And these obstacles are poverty, ignorance and glaring inequalities in our society. Can we not capture some of those sparks which fired the leaders of our freedom movement to wage

the country will do a good deal of introspection on this matter. While I would not like to anticipate the outcome of their soul-searching or suggest any solutions to overcome the present crisis of confidence, I would like to share some of my concerns with you. There have been situations of disquiet and unrest in many campuses in our country as well as those abroad. Most of them were associated with major political upheavals and convulsions, against domestic or foreign tyrannies. There have also been instances, particularly in the developed countries, where such upheavals were the direct consequences of a crisis in the value systems which development itself fostered. In both cases, when stability followed political convul-

have not been able to provide a truly national perspective to our higher education. Combined with our readiness to accept uncritically certain elements that lend glamour and glory to our academic pursuits, we find ourselves in a situation in which concerns about who gets education, and what education he gets, are practically relegated to the background. Basically, these are matters for reforms within the university system and not prescriptions for any external agency to lay down.

It would appear to any superficial observer of the educational scene in India that during the last two years or so our universities have been arenas of turmoil, chaos and disorder. There are reports, almost everyday though some of them are exaggerated, which leave one with the impression that most of our universities remain closed for long periods in the year. I have had a study made of this subject and I find that between January and December, 1978, there were disruptions in the normal functioning of about 30 universities in the country. They were affected for periods, in some cases, of 2-3 days; in some other cases, for as long as 2-3 months. But what was more revealing, and what should really cause us concern, are the immediate reasons for these incidents. Most of these in my view are such as could be solved within the system itself. In fact, we had taken up these questions several times with the State Governments, the Chief Ministers, the Governors of States who are Chancellors of the universities and also with the leaders of major political parties in the country. I am sure that with greater understanding and cooperation of all concerned, most of these problems can be solved, though I must confess that solutions to the larger social problems can be found only through rapid economic development.

Having said this, I must also mention that the university community itself should assume a more positive role in finding appropriate solutions to their problems. It is often emphasised

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a war against these obstacles to our development? Can our universities not produce a generation of men and women who can take on the task of leading our social and economic development, just as they did earlier in giving the leadership to political freedom? If the freedom movement was a relentless fight against a mighty colonial empire, what we need today is an equally determined effort to reform ourselves, an effort inspired by convictions and a vision of our future. Naturally, one looks up to universities to provide the leadership in this effort.

Are our Universities today in a position to inspire such confidence? Can they claim with pride that they are the natural leaders in our efforts to bring about social and economic change in the country? I do hope that the University community throughout

sions, or the quest for moral and spiritual values found one outlet or the other, normalcy and quiet returned to the campuses. But is it true in our case?

I would like to think that the glorification of the campus unrest in the developed societies has had a disastrous consequence for us. The university students are impressionable, articulate, idealistic and dynamic. But all these virtues, most unfortunately for us, add up to a fury that only consumes, and does not create. If we can correct the situation, I am sure, we would go a long way. Our goals of economic and social development are far from fulfilled and in any case we have not reached a stage where it could be said that a crisis in the value system has overtaken the younger generation. Then what are our ills due to? The important cause, to my mind, is the fact that we

that the sanctity of the campuses should be guarded, autonomy of the universities should be preserved and that there should be no interference by any external agency in their affairs. I am second to none in the conviction that university autonomy should be jealously preserved and that the campuses are sacred. But I would like to remind you that this concern for sanctity and autonomy is relevant as much to those within the universities, as to those outside. Who is to blame if desecration takes place inside? What have we done to ensure that this does not happen in our campuses? We have teachers' organisations in the country—far too many, perhaps, more than what we need! Regrettably, they are mainly preoccupied with promotion of sectional interests, some of which come in conflict with others. Have we ever considered it seriously that the teaching community should assume the moral and intellectual leadership in society, provide a truly national perspective and sense of purpose to our education and make it a powerful and dynamic instrument for bringing about social change and rapid economic development and for laying the foundation of a great nation? If our teaching community fails to do so, and the younger generation turned out of our educational institutions does not acquire a social purpose and a vision of the future, I must confess that we cannot accept that our universities are well with the nation. Many instances that we notice around us, whether of the use of fire-arms in the hostels or mass-copying at examinations, can effectively be eliminated if the teachers provide the right moral and intellectual leadership. If students have to be dealt with firmly and decisively, teachers have to enjoy moral authority not only among students but also in the society.

The opportunities available to provide this leadership are indeed greater today. The system already produces the manpower needed for our economic and industrial development, though there are disparities between strata of society and regions. We are now

in a position to correct these imbalances, without any serious dislocation in the supply of trained manpower. We only need to concentrate our efforts for a period of time to reforming the system and providing a mass base to our educational efforts, to ensuring that the benefits of education reach all the sections of our population and to all regions and areas in as equitable a manner as possible. Even after 30 years of Independence, we are still far from fulfilling the constitutional objectives of providing elementary education upto the age of 14 for all children. The problem of dropouts needs the attention of educationists who should identify the socio-economic factors that come in the way of our progress in ensuring universal elementary education and to find out proper remedies and solutions. We have decided to attach greater priority to primary education; this is reflected in the larger allocation made for it in the present Plan.

The two basic problems that we face are poverty and illiteracy. Indeed they are two aspects of the same problems and the struggle to overcome one without at the same time waging a fight against the other is bound to result in aberrations and disappointments. The exclusion of a vast majority of the people from the process of education has been one of the major concerns of the present Government. While determined efforts must be made to universalise elementary education upto the age of 14 years, educational facilities have to be extended to adult population also to make good their educational deprivation and to enable them to develop their potentiality. Indeed, universalisation of elementary education and adult literacy are complementary to each other.

The efforts to provide education to illiterate adults, especially those below the age of 35, will not only enable them to develop their own potentiality, but also through an appropriate exposure to the benefits of education ensure that the children in their homes are not withdrawn at too early a stage. The National Adult Education Programme launched in

October last year lays special emphasis on the imparting of literacy and skills relevant to life. It has to cater specially for the economically and socially deprived sections of society. Many amongst them have grown up in a culturally rich environment where learning has been through the spoken word transmitted from generation to generation. The programme must, therefore, respond to their cultural and intellectual environment and build upon their innate artistic perceptions and skills in craft.

I mention these two areas of education in the context of the reforms in our educational system. These reforms are neither possible nor effective without the whole academic community participating in them for their successful implementation. It is here that the people at large would look to you for leadership and initiative. It is through such initiative and involvement that you will influence, and in turn be influenced by the community around you. And this, in the ultimate analysis, is the real objective of the University.

These are not easy tasks. Doubts are expressed that the importance and priority given to elementary and adult education are the results of some misplaced enthusiasm. A view is also held, among the academic community, that these two sectors of education are being given greater attention than the needs of higher education. I have tried to explain, in some detail how these misconceptions have developed. It requires no great insight to understand that the superstructure of higher education cannot subsist unless it is deeply rooted in our soil. What is more important, if our higher education has to acquire a greater purpose and content, it has to serve the needs of the entire society, and not merely the elitist sections. It does no damage to higher education if we widen its base and attract students from all sections of our population.

[Excerpts from the convocation address delivered by Dr. P.C. Chunder, Union Minister for Education and S.W. at the University of Bombay.]

Seminar on technology transfer

In his key note address at the seminar on 'Transfer of technology to rural areas' at the College of Engineering, Osmania University, Dr. N. Shanmukha Rao, Vice-Chancellor of Jawaharlal Nehru Technological University stressed the need for development of appropriate technology for rural areas by university research laboratories. He called on engineering institutions and universities to fill the gap of skilled technical manpower to look after the maintenance of agricultural equipment. He suggested introduction of short-term technical courses for teachers who could man vocational institutions at the intermediate level. The junior colleges in mofussil areas could run short term courses for imparting basic knowledge for maintenance of machinery used in rural areas. This will remove curbs on productivity of agriculturalists, who were affected in the absence of prompt repair services. University students could play their role through National Service Scheme by training villagers in equipment maintenance. Dr. Shanmukha Rao called for coordination of work of the various agencies involved in rural uplift to avoid wastage of efforts and resources.

Prof. G. Ram Reddy, Vice-Chancellor of Osmania University said that an extension cell for dissemination of appropriate technology and social science concepts to develop rural areas will be opened at the University. The research cell in rural development will be established with the assistance obtained from other sources.

Prof. V.V. Subba Rao, Head of the Mechanical Engineering Department at the university said that the seminar was arranged as part of the diamond jubilee celebrations of the university. The main object was to examine the influence of the efforts put in by various developmental agencies engaged in the field of rural development. The seminar provided an important forum for exchange of views among technologists, officials, students, non-students and youth.

BITS modifies programmes to receive 10+2 products

With the introduction of 10+2 scheme in the schools and the fact that a large bulk of input to BITS from July 1979 will be from this system, BITS has taken a comprehensive decision regarding accommodating such inputs. It will be recalled that AICTE and other professional apex bodies had recommended an appropriate examination to these products to determine whether the duration of the first degree in the professional subjects would be 4 years or 5 years. In view of the insufficient information about the preparedness of the 10+2 product in terms of their own syllabi, BITS, being an all-India institution, has decided that after admission every student will be given a test based upon the first three basic courses of the Institute namely Physics, Chemistry and Mathematics in our existing five-year integrated programmes. It is proposed that through certain operations a student's achievement in these courses would be tested. This is exactly the AICTE decision in respect of engineering and BITS has extended this concept to all its first degrees. A student is allowed to proceed upwards only if a minimum level of achievement has been secured by him at the test, failing that, through a preparatory year of courses which will be the above named courses. In the case of English on the other hand, while the test will determine his preparedness, the student will however be allowed to reach the first year of the programme and later within a prescribed time make up for the deficiency in English.

Beyond the preparatory year the programme consists of 4 years that is eight semesters including the usual option of practice school or

CAMPUS NEWS

thesis. As of now the first degrees at the Institute are: B.E. (Hons.) Civil, Chemical, Electrical and Electronics, Mechanical; M.Sc. (Hons.) Biological Sciences, Chemistry, Economics, Mathematics, Physics; B. Pharm. (Hons.); M.Sc. (Tech.) Computer Science, Instrumentation, Science and Technology Development, Museum Studies; M.M.S.; M.A. (Hons.) English, M.A. (Hons.) General Studies.

In the design of these programmes many flexibilities which have been operated by the Institute for the past several years like the dual degree scheme, transfer etc. have particularly assumed a new significance. For example, under the dual degree scheme priorities have been worked out and the first priority will be given to students who enter one of the M.Sc. (Hons.) programmes to work for a second degree in any of the B.E. (Hons.) programmes, B.Pharm (Hons.), M.M.S., M.Sc. (Tech.) Computer Science, M.Sc. (Tech.) Instrumentation. The requirements for dual degree are the compulsory courses of each of the two programmes plus a specified number of electives. Under the new design it is possible for the Institute to accommodate every aspirant from the M.Sc. (Hons.) programmes to work under the dual degree scheme as stated above. As per practice the dual degree will be assigned on the basis of performance and preferences of the competing students.

Economics as a Science Degree—M.Sc. (Hons.) Economics

With the experience of the last eight years and the modifications made in the Economics programme particularly in response to the

students' experience at the BITS practice school stations, the contents of the economics programme have been considerably upgraded and from July 1979 the degree is named as 'M.Sc. (Hons) Economics'. In addition to the economics content, the programme has the strong base of Mathematics and Science as imparted to the science students. In addition there is a category called Analysis and Application Oriented Courses (AAOC) which is available for the other degree programmes also as listed above and this category contains courses like probability and statistics, Social Engineering, Optimization, Data Processing, Operations Research, Systems etc.

This change over of the degree from M.A. (Hons.) Economics to M.Sc. (Hons.) Economics was welcomed by the Indian Economics Association through its Secretary.

M.A. (Hons.) General Studies

A new programme under the M.A. (Hons.) degree in General Studies has been introduced. It is felt that a basic training in both humanities and social sciences at one end and scientific studies at the other will prepare a candidate for new opportunities such as those envisaged by the UPSC in its recent requirements for Civil service examinations and also new opportunities which would be available for candidates who can combine in their university studies the two broad streams, the so-called two cultures, namely humanities and scientific studies.

Individual students have been provided opportunity to take science courses either of the type requiring high dependence on mathematics and analysis or science courses which are more narrative and integrated at the conceptual plane. In addition there are categories like technical arts, technique oriented courses, humanities and social sciences, music and fine arts, courses on development process and a certain number of electives. This programme has also the alternative component of practice school or thesis. The student is also provided with an opportunity to do a dual degree in one of the other three programmes namely, M.A. (Hons.) English, M.Sc. (Tech.) Science and Technology Development, M.Sc. (Tech.) Museum Studies.

Punjabi Varsity organises regional history conference

Dr. M.S. Randhawa, former Vice-Chancellor of the Punjab Agricultural University inaugurated the thirteenth session of the Punjab History Conference recently at Punjabi University, Patiala. He stressed the need for study of history of the people, their social life, and their struggle in life. The archeological finds, paintings and fossils could help in tracing the history of mankind. Dr. Randhawa said that history of agriculture could not be taken in a narrow sense as it involved the evolution of man. The fossils and archeological preservations in Silaspur, Kangra and Gular regions in northern part of the country resemble the conditions of man's evolution in East Africa. The northern region of the country was therefore important to study the history of man. The man from the very beginning had

been engaged in discovering and controlling the solar energy and was constantly progressing in this direction. The study of agriculture was perhaps the synoptic history of man.

Dr. Ganda Singh, general president of the session in his address pleaded for establishment of reference sections in the university libraries for preservations and study of rare books and old manuscripts. He said Punjab was full of places of historical interest. The scholars could bring to light the history of these places for the benefit of present and future generations. The publications of local history would serve as a source material for comprehensive works,

Dr. Amrik Singh, Vice-Chancellor of the university welcomed the delegates and said that a separate library in the campus would preserve the rare books donated by Dr. Ganda Singh. The

copyright of all these books had been provided to the university.

Rajasthan Varsity designs physics equipment

One of the educational equipment fabricated and designed at the Centre for Development of Physics Education in Rajasthan University has been adjudged first in the competition organised by the American Association of Physics Teachers. The apparatus were sent for the competition from the different centres of advanced studies of the world. The Rajasthan University Centre had initially developed eight units after performing different experiments. Sixty simple instruments were designed and fabricated to help students understand physics with more perception and to enable them to contribute towards growth of knowledge in physics. Prof. Babu Lal Saraf of the Physics Department said that these apparatus were being used for regular teaching programmes, by various colleges in Rajasthan and other places outside the state. The Indian Institute of Technology, Delhi, Sardar Patel University and some other institutions of higher learning have obtained the equipment against payment to cover the cost on fabrication which has also initiated a large scale interaction. The equipment is original in form and instructive for the learner. The University of Rajasthan has also initiated another project on science education to impart knowledge in an informal way. Methods of giving instructions to the students at different levels including writing of books with graphical language which cut across the barrier of language have been developed at the university centres. A museum on science education is also being developed for permanent and mobile instructions. The studies which now cover physical sciences will be extended to life sciences in a phased manner.

New projects at Osmania Varsity

The Senate of the Osmania University at its recent meeting approved payment of remunera-

tion to examiners according to the guidelines issued by the University Grants Commission. The university senate approved the budget estimates for the next financial year with total outlay of Rs. 551.76 lakhs. A substantial amount has been allotted in the budget for development of sports. The budget has an allocation of Rs. 178.55 lakhs to be provided by the University Grants Commission for procurement of books, equipment and fellowships. Specialised and sophisticated equipment will be purchased during the year for development of service facilities at the instrumentation centre of the university. The University Grants Commission will also provide assistance for institution of two-year full time MBA course. The University has collected Rs. 52 lakhs for the diamond jubilee programme. The programme for the jubilee year includes establishment of a research cell in the field of rural development, additional chairs in some of the existing disciplines and expansion in new areas of learning.

The University will undertake for the first-time computerisation of B.A. and B.Com. results to enable the candidates to apply for other courses in time.

Research institute in printing technology

Inaugurating the golden jubilee celebrations of the Institute of Printing Technology in Madras recently, Shri C. Aranganayagam, Tamil Nadu Education Minister stressed the need for close liaison between technical institutions and industrial establishments to ensure integrated development. Mr. S. Vaiyapuri, State Director of Technical Education said a research institute in printing technology will soon be established in the campus of the Printing Institute. The Institute of Printing will offer new technology for production of books needed for the massive programme of adult education.

Prof. G.R. Damodaran, Vice-Chancellor of Madras University released the commemoration volume on the occasion.

Plea for common examination in varsities

Dr. Ganpati Chandra Gupta, Vice-Chancellor of the Himachal Pradesh University said recently in Simla that the present education system was three hundred years old and needed a change to suit our environment/needs. He advocated adoption of a common syllabus by the universities in the region and establishment of a Regional Examination Board for conducting various examinations. This would help in standardisation of education and solve the difficulties in the distribution of text books. He suggested that instead of holding one annual examination it would be better to organise examinations every alternate month leaving the students free to appear in any of the examinations during the year. The Vice-Chancellor said that system of spot evaluation of answer books had been introduced at the university to facilitate the work of declaration of results. The Directorate of Correspondence Courses at the university has been activated to expedite lessons to students according to schedule. A complaint cell has also been set up in the university. Rules for admission to M.Phil courses have been modified for the benefit of students with fifty to fifty-five per cent marks to be eligible for the course. These students would however be required to improve their percentage of marks in M.A. examination as well. Dr. Gupta emphasised the need for democratic reforms in the university administration.

NS NIS to conduct certificate course in sports

The Netaji Subhash National Institute of Sports, Patiala will conduct a six-week certificate course on sports at its four centres from May 7 to June 16 this year. The courses will be conducted in seventeen games besides athletics. The games do not include women's cricket and chess. The institute at its headquarters in Patiala will impart training in football, handball, judo, swimming, kabaddi, kho-kho and yoga.

The courses in other games will be conducted at NIS Centre, Delhi, Laxmibai National College of Physical Education, Gwalior and NIS Centre, Bangalore.

Seminar on groundwater exploration

The seminar on Geohydrological and groundwater exploration held recently in Visakhapatnam under the auspices of the University Grants Commission has recommended the creation of a centralised agency for collecting and preserving information on hydrological sciences. Stress was laid on weekly water balance computations for benefit of the farmer. Prof. V.V.J. Sharma of Andhra University emphasised the need for water quality studies. He said that ground water quality analysis of Visakhapatnam would be helpful in determining the availability of important minerals in the region.

The seminar was co-sponsored by the Geological Survey of India, Andhra Pradesh Irrigation and Development Corporation, Association of Exploration Geophysicists and Andhra Pradesh Academy of Sciences. Participants to the seminar included delegates from central and state governments institutions and various universities.

Seminar on problem of state autonomy

Dr. Vikas Mishra, Vice-Chancellor of Kurukshetra University inaugurated recently the seminar on the problem of state autonomy and its emerging trends organised by the Department of Political Science of the University. He said political scientists should examine the question of centre-state relations in the context of present situation in the country. He said the balance between the centre and the state was very delicate and any attempt to change it will create disequilibrium.

Dr. D.C. Verma, former Vice-Chancellor of the University said that if we wanted our democratic system to thrive, we should not neglect the functioning of institutions at grassroot level. He stressed

sed the need for a workable balance between the forces of centralisation and decentralisation.

Dr. V.S. Budhraj, Head of the Department of Political Science of the University said that there had been a growing demand for additional powers to the states which should be considered in the context of national unity. He made a plea for establishment of an egalitarian society to achieve a harmonious balance between national integration and state autonomy.

About thirty political scientists from the various universities participated in the seminar sponsored by the University Grants Commission.

Plea for improvement in teaching methods

Delivering the presidential address at the twentieth anniversary of the Indian Institute of Technology, Bombay, Dr. H.N. Sethna, Chairman of the Atomic Energy Commission called for a constant effort in improving and updating the methods of teaching in technological and engineering institutions. The education imparted in such institutions should suit the industrial development in our country. Dr. Sethna paid tributes to the IIT for its contribution in the field of technology and science. He said that with the help of Soviet scientists, the Institute would give a new approach to education system and maintain the pace of advancement in the ensuing decades.

Seminar on journalism education

The Department of Journalism of Banaras Hindu University organised recently a two-day seminar on the second Press Commission with special reference to journalism education in India. The seminar has stressed the need for coordination of academic programmes relating to journalistic training with agencies of mass communication. The formation of a National Council for Journalism and Mass Communication has been suggested to train students for job-oriented courses.

It was felt that in-service training programmes for journalists should be encouraged and a fair amount of obligation may be placed on newspapers to absorb them after their studies. The government agencies and public sector undertakings should formulate such a policy that jobs in the field of journalism and public relations are offered to the trained journalists. The seminar favoured uniformity in journalism courses in universities which should be of two years duration. The problems of provision of textbooks and equipment of mass media to students to make their courses practical and useful were also debated in detail.

Dr. Hari Narain, Vice-Chancellor of the University inaugurated the seminar and Prof. P.N. Malhotra former Director of Mass Communication presided. The delegates included representatives from Newspapers, Press Commission and University Centres.

UAS plans novel animal home

The novel animal shelter-cum-rescue home of the Society for prevention of cruelty to animals was inaugurated recently by Karnataka Chief Minister, Shri Devaraj Urs at the University of Agricultural Sciences, Bangalore. The animal home would have adequate facilities to maintain initially one hundred fifty stray, wounded and pet animals. It will also have separate blocks for big animals, small animals and administrative buildings with facilities for examination of animals by doctors and an operation room. Medical facilities at the home would be provided by the doctors attached to the university veterinary hospital. The university will also put up a separate veterinary hospital in other campuses.

Dr. H.R. Arakeri, Vice-Chancellor of the University while speaking on the usefulness of animals, appealed for the immediate provision of additional clinical facilities for the veterinary college.

Madras Varsity decision on 12-year courses

The University of Madras has issued an ordinance to recognise as equivalent the 12-year courses

leading to XII standard examination conducted by the Central Board of Secondary Education, Council for the Indian Schools Certificate Examination and the Tamil Nadu Board of Higher Secondary Education. The ordinance provides that all other candidates who have taken any examination conducted by the state government, university or statutory board under the 10+2 pattern and after twelve years of study with not less than five subjects including English shall be eligible to join the first year of the degree course. Candidates applying for admission to professional courses including medicine, engineering and technology should have studied the subjects relevant to such course and should satisfy the admission requirements.

New courses at Madras Varsity

The Senate of the Madras University at its recent meeting approved the introduction of post-graduate certificate course in 'Effective Communication' and a diploma course in 'School Management'. The meeting of the Senate was presided over by the Vice-Chancellor, Shri G.R. Damodaran.

A syndicate member, Mrs. P. Devadoss, while summarising the salient features of the annual report of the university hoped that the university and the Directorate of Collegiate Education would give weightage for the time spent on community services for purposes of calculation of teaching load.

Sports coaching for Varsities students

The Association of Indian Universities has selected about 390 sportsmen/sportswomen from university centres all over the country for the next summer coaching-cum-competition programmes. The programme will be conducted for twenty-two days followed by competition among the zonal teams. The camps in football and athletics are being organised as a part of the training programme of the Indian Universities Contingent proposed to be select-

ed for participation in the next world university games scheduled to be held in Mexico in September. The games included in this year's calendar are: athletics; football; hockey; volleyball; basketball and wrestling.

TIFR experiments on Astronomy

The Tata Institute of Fundamental Research in collaboration with the Indian Space Research Organisation and the Inter-Cosmos of the Soviet Union are conducting balloon experiments in Hyderabad for high energy gamma rays studies. These experiments are of fundamental nature and would help scientists in studies relating to the meteorological, and the sun-earth relations.

Shri R.T. Redkar, incharge of the project said that important scientific data had been obtained from experiments conducted earlier. The aim of the joint project was investigations on the properties of astronomical objects. The balloon studies were being conducted all over the world to compare the data as transmitted through satellites. It was felt that experiments would help formulate the bases for satellite experiments.

Marathi chair for Karnatak Varsity

Shri S.S. Wodeyar, Vice-Chancellor of Karnatak University, disclosed recently in Dharwar that the state government had sanctioned a study chair in Marathi in the university. The Maharashtra Government had also sanctioned a study chair in Kannada at Bombay University. The Vice-Chancellor emphasised the role of languages in fostering national unity and integration. There was much in common between Kannada and Marathi and the harmonious relations between these languages would be further strengthened with a greater exchange of thoughts between the people of the states.

PG complex of Dakshina Bharat Hindi Prachar Sabha

Speaking at the inaugural function of the new building of the

Dakshina Bharat Hindi Prachar Sabha in Hyderabad, the Secretary Shri V. Radhakrishnamurty said that out of the sixty thousand candidates who had appeared for the different examinations conducted by the Sabha, forty thousand were women candidates. The Sabha had three colleges and twenty-eight schools imparting education upto Visharad level. He said the government had given their clearance recently to introduce postgraduate classes leading to M.A. and Ph.D. degrees. The postgraduate complex of the Sabha would start conducting classes soon. The syllabus of the post-graduate classes would cover studies on classical and modern Hindi literature and other papers to help students acquire functional language competence in the field of commerce, law, science and administration.

NS NIS sports complex at Calcutta

Shri Jyoti Basu, West Bengal Chief Minister visited recently the proposed site for the sports complex of the eastern wing of the NS National Institute of Sports in Salt Lake in Calcutta. The Chief Minister was shown the blue-print of the complex which included the football ground around which a 400-metre cinder-track will be laid for coaching of athletes, a hockey field, a covered gymnasium in the style of Khudiram Indoor Stadium and courts for basketball, volleyball, kabaddi and kho-kho. The work on the complex will start immediately and the football ground is expected to be completed for the trainees by June this year.

Indore Varsity organises summer institute in education

The Department of Education of Indore University organised during the current academic session a summer institute on the pedagogy of higher education for the benefit of college teachers. The summer institute was organised mainly to help the teachers of various disciplines to interact on common problems for the qualitative improvement of higher education. It highlighted the neg-

lected area of pedagogy at the higher education level. Techniques of organisation of courses, methodology of teaching, psychological problems involved in the teaching and handling of students at the higher education level were some of the main problems discussed at the Institute. The Institute made the following recommendations:

- Professional in-service training/orientation courses in different areas should be organised frequently for college and university teachers.
- The duration of such courses should be normally six weeks. Completion of three such successive courses of 200 hours each should lead to award of a degree in bachelor of higher education.
- Teachers desirous of attending such courses should be granted duty leave.
- Evening courses should also be organised for benefit of college teachers.

Summer institutes in agricultural sciences

The Indian Council of Agricultural Research will hold twenty-six summer institutes including five short term institutes during the summer vacation of 1979 in the field of agriculture, animal husbandry and home science subjects for the benefit of teachers, research workers and extension specialists. The objective of the in-service training would be to provide necessary orientation to teachers so that they could relate their experience to practical problems. Applications on the prescribed forms will be entertained direct by the Director of the summer institutes. The institutes will be conducted at Punjab Agricultural University; University of Agricultural Sciences, Bangalore; Haryana Agricultural University; Tamil Nadu Agricultural University; Indian Agricultural Research Institute; G.B. Pant University of Agriculture & Technology, Pantnagar; Ranchi University; Andhra Pradesh Agricultural University; Mysore University and other research centres.

THE UNIVERSITY OF BURDWAN

RAJBATI BURDWAN
WEST BENGAL

Advertisement No. 14/78-79

Dated, April 5, 1979

Applications in the prescribed form are invited for the following posts in the approved scales of pay (viz. Professor—Rs. 1500-60-1800-100-2000-125/2-2500/-, Reader—Rs. 1200-50-1300-60-1900/- and Lecturer - Rs. 700-40-1100-50-1600/-) with allowances and other benefits according to University Rules.

A. Department of Mathematics

(i) Professor of Statistics—One post

(ii) Reader in Statistics—One post

B. Department of Bengali

Lecturer—One post

C. Department of Physics

Lecturer—One post

D. Department of Commerce

Lecturer—One post

E. Department of Philosophy

Lecturer—One post

MINIMUM QUALIFICATIONS

1. (a) A Doctor's Degree or published research work of an equally high standard, and

(b) Consistently good academic record with first or high Second Class (B in the seven point scale) Master's Degree in the relevant subjects or an equivalent degree of a foreign University. For the post mentioned in E, persons holding Master's Degree in allied discipline also are eligible to apply.

2. Additional Requirements

For Professorship

- At least ten years' teaching experience in Post-Graduate Class;
- Competence to plan and supervise Research Project;
- Publication of sufficient merit.

Desirable Qualification : Specialisation or Proficiency

For A (i) & (ii) : Mathematical Statistics/Multivariate Analysis/Econometrics/Industrial Statistics/Bio-Statistics.

For B : Bengali Linguistics

For C : Solid State Physics

For D : Industrial Relations and personnel Management

For E : Indian Philosophy (Vedanta).

The University Council may on recommendations of the appropriate Selection Committee, waive any of the requirements in view of the candidate's specialised knowledge in the subject. The choice of the Committee may not necessarily be confined to those who apply formally.

For application form and other information apply to the Registrar with a self-addressed stamped (0.40p.) envelope (9" x 4").

Last date for submission of application with requisite fee of Rs. 5/- is 25 April, 1979.

A.K. Chaudhuri
REGISTRAR

Indian School of Mines

Dhanbad-826004

No. 615135/79

Dated: 19-3-1979

Admission to Post-Graduate Programmes 1979-80

1. Applications are invited from candidates possessing requisite qualifications for admission to the following Post-graduate Programmes being offered, or likely to be offered, at the Indian School of Mines, which is deemed to be University under the University Grants Commission Act:

Programme—being offered unless otherwise stated	Department
I. CISM/DISM/M Tech (Industrial Engg and Management) (Oriented towards mineral industries) —See Note B	Deptt of Ind Engg and Management
II. One-year M Tech (Mineral Exploration)	Deptt of Applied Geology
III. One-year M Tech (Engg Geology)	-do-
IV. One-year M Tech (Mining Geophysics)	Deptt of Applied Geophysics
V. One-year M Tech (Petroleum Exploration) —See Note A	Likely to be offered by Deptts of Appl Geo-physics and/or Pet Engg
VI. DISM/M Tech (Mineral Engg)	Deptt of Chemistry, Fuel & Metallurgy
VII. DISM/M Tech (Fuel Engg)	-do-
VIII. DISM/M Tech (Drilling Engg)	Deptt of Engg & Min Machinery
IX. DISM/M Tech (Mining Machinery)	-do-
X. Three year part-time M Tech programme in Mining Mach (Evening version of IX)	-do-
XI. DISM/M Tech (Mining Engg) (Specialisations offered: Mine Planning and Design/Rock Mechanics/Mine Environment)	Deptt of Min Engg
XII. Two-year Industry-oriented M Tech programme in Opencast Mining	-do-
XIII. Three-year part-time M Tech programme in Mining Engg (Evening Version of X)	-do-

Note A: Programme V is a new one likely to be started this year.

Note B: Programme No. 1 consists of three terms of course work, each of 12-week duration. A student successfully completing any one of the three terms would be awarded the post-graduate Certificate of CISM. A student completing any two terms, with additional guided project work of 4-month duration, would be awarded the postgraduate Diploma of DISM, while a student completing all the three terms with guided research work for one-year would be awarded the M Tech degree in Industrial Engg and Management.

Note C: Programme Nos. VI, VII, VIII, IX and XI consist of one-year of course work, successful completion of which leads to the grant of the postgraduate DISM Diploma. Candidates desirous of working for the M Tech degree are required to put in an additional year on project work.

2.1 Eligibility requirements for the different programmes are given below:

- I. **CISM/DISM/M Tech (Industrial Engg):** A degree or equivalent in any discipline of Engg with at least 6 months training in the industry.
- II. **MTech (Mineral Exploration):** MSc degree or equivalent degree in Applied Geology.
- III. **MTech in (Engg Geology):** MSc degree or equivalent in Applied Geology or Bachelor's degree in Civil Engg.
- IV. **MTech Mining (Geophysics):** M Sc degree or equivalent in Geophysics or Applied Geophysics.
- V. **MTech (Petroleum Exploration):** MSc degree or equivalent in Geology (Preference will be given to candidates who have specialisation in Petroleum Geology/Sedimentology/Stratigraphy and Palaeontology, OR at least one year's field experience in Petroleum Exploration).
- VI. **DISM/M Tech (Mineral Engg):** A degree in Chem/Min/Mech Met/Elec Engg, or M Sc in Ore Dressing, or equivalent.
- VII. **DISM/M Tech (Fuel Engg):** A degree in Fuel/Chem/Pet/Min/Met/Mech/Elec Engg, or equivalent.
- VIII. **DISM/M Tech (Drilling Engg):** A degree in Mech/Min Machinery/Min/Automobile/Production Engg, or equivalent.
- IX/X. **DISM/M Tech (Mining Machinery):** A degree in Mech/Min/Elec/Electronics Engg, or equivalent.
- XI/XIII. **MTech (Mining Engg):** A degree in Mining Engg or equivalent.
- XII. **MTech (Opencast Mining):** A degree in Min/Civil/Elec/Mech Engg, or M Sc in Applied Geology or equivalent. Non-Mining candidates should have one-year approved experience in Opencast Mines.

2.2 In each case, a candidate should have obtained atleast 60% marks in qualifying examination relaxable to 50% for sponsored candidates and for those with field/research experience or special aptitude for research.

2.3 Candidates may be required to undergo such test/interview as may be prescribed.

2.4 6-10 candidates may be admitted to each course, according to demand. 20% of the seats are reserved for SC/ST candidates.

3.1 Preference will be given to sponsored candidates. (Sponsorship in this context means retention of lien on post and grant of suitable allowance). Application of sponsored candidates should carry suitable endorsement by the employer.

3.2 **Scholarships:** Unsponsored students are eligible for a scholarship of Rs. 400/- p.m. provided that they have at least 60% marks (55% in case of SC/ST candidates) in the qualifying examination.

4.1 **Procedure for applying:** Application forms along with particulars can be obtained by sending a Crossed Postal Order Draft Bank for Rs 5/- (Rupees Five only) made payable to the Registrar, Indian School of Mines, Dhanbad-826004.

4.2 **Last Date for Receipt of the Completed Application is May 30, 1979.**

**S.P. VARMA
REGISTRAR**

INDIAN INSTITUTE OF TECHNOLOGY, BOMBAY

P.O. I.I.T., POWAI, BOMBAY-400076

Advertisement No. 966/79

Applications on plain paper are invited from the citizens of India for filling up the following posts in the Institute. Persons employed in the Govt./Semi-Govt. Organisation or Educational Institution must apply through the Employer. Preference will be given to the candidates belonging to Scheduled Caste/Scheduled Tribes Community and Ex-servicemen. Age preferably below 30 years. The posts carry allowances such as D.A., H.R.A. and C.C.A. etc. as per the rules of the Institute (as admissible to Central Govt. employees stationed at Bombay).

POSTS

1. **Foreman (For Industrial Design Centre)**

Scale of Pay : Rs. 550-25-750-EB-30-900 Plus usual allowances as admissible under the Rules.

Qualifications & Experience : Diploma in Mechanical/Electrical Engineering with 7 years workshop experience.

OR

Regular apprenticeship for 4 to 5 years in Industrial Establishment of repute and 7 years experience in industrial establishment. Ability to prepare time estimates for jobs and organize and control labour. Experience in Machine maintenance and familiarity with metals like plastic, wood, metal desirable.

If a candidate has less experience (minimum 2 to 3 years) than what is stipulated above, he may be considered for a Junior Post of "Workshop Supervisor" in Grade of Rs. 425-750.

2. **Senior Technical Assistant (For Central Library)**

Scale of Pay : Rs. 550-25-750-EB-30-900 Plus usual allowances as admissible under the Rules.

Qualifications & Experience : Good Bachelor's Degree of a recognised University plus Degree/Diploma in Library Science.

Master's Degree in Library/Information Science preferable. At least 3-5 years' working experience in a big reputed Library in a responsible capacity.

Candidates should be well conversant with acquisition, processing, handling of large volume of current journals, identification, collection and dissemination of scientific and technical data and acquainted with the existing information systems and tools etc.

Deserving candidates may be given higher initial start.

3. **Library Assistants (For Central Library):** 1 post is reserved for SC/ST candidates.

Scale of Pay : Rs. 380-12-440-EB-15-560-EB-20-640 plus usual allowances as admissible under the Rules.

Qualifications & Experience : Graduate of a recognised University with a Bachelor's Degree in Library Science.

At least 2-3 years experience of working in an Academic/Research Library.

Candidates who possess the requisite qualifications and experience may apply stating name, date of birth, details of academic qualifications and experience with copies of Certificates, testimonials etc. together with a crossed Indian Postal Order payable to the Registrar, I.I.T., Bombay for Rs. 3/- (0.75 paise for SC/ST) for posts at Sr. Nos. 1 & 2 and Re 1/- (0.25 paise for SC/ST) for post at Sr. No. 3 to the Registrar, Indian Institute of Technology, Powai, Bombay-400 076 on or before 30-4-1979.

OSMANIA UNIVERSITY HYDERABAD-500 007 (A.P.)

Advertisement No. 7/1979

Applications, in the prescribed form, together with the registration fee of Rs. 5/- are invited for the following posts in the University service, so as to reach the undersigned on or before 1st May, 1979.

1. Professor of Psychology : Rs. 1500-60-1800-100-2000-125/2-2500
2. Reader in Public Administration : Rs. 1200-50-1300-60-1900
3. Lecturers in Public Admn. : Rs. 700-40-1100-50-1600
4. Documentation Officer (Public Admn.) : Rs. 700-40-1100-50-1600
5. Lecturers in Business Management : Rs. 700-40-1100-50-1600

AGE

Professor—Not above (50) years
Reader—Not above (40) years
Lecturers/Documentation Officer—
Not above (35) years

NOTE

- (i) Age limit does not apply to the employees of this University.
 - (ii) Relaxation in age to the extent of five years may be granted to candidates belonging to S.Cs., S.Ts. and B.Cs., for the posts of Lecturers only.
 - (iii) The teachers of affiliated colleges who have put in at least five years service in any of the college affiliated to the Osmania University may be given relaxation in age to the extent of five years.
 - (iv) Age relaxation can be considered in deserving cases.
- 14%, 4% and 25% reservations are made for Scheduled Castes, Scheduled Tribes and Backward Classes respectively only in case of Lecturers.

Application forms can be had from the Director, Department of Publications and University Press, Osmania University, Hyderabad-500 007, A.P. (India) on payment of Rs. 4.50 in person or by money order or by a postal order UNCROSSED made payable to the Director, University Press, O.U. by sending a self-addressed envelope (11½ x 26½ cms.) duly stamped for ordinary or registered post.

Full particulars can be obtained on requisition from the Director, Osmania University Press, free of cost, by sending a self-addressed stamped envelope.

B. Ramchandra Reddy
REGISTRAR

THE UNIVERSITY OF KASHMIR

SRINAGAR-190006

NOTICE

Applications on the prescribed application forms which can be had from the Registrar, University of Kashmir, Hazratbal, Srinagar-190006 on payment of Rs. 6/- in cash or by sending a crossed postal order drawn in favour of the Registrar cashable at Srinagar Post Office, are invited for the below noted posts:-

S. No.	Post	No. of posts	Scale of Pay
1.	Co-ordinator (National Adult Education Programme)	One	Rs. 1100-1600
2.	Officer Incharge of Trainings	One	700-1300
3.	Officer Incharge of Follow up action	One	700-1300
4.	Officer Incharge of Materials	One	700-1300

Details with regard to the qualifications and experience for each post can be had from the office of the undersigned.

S.S. Rizvi
REGISTRAR

RABINDRA BHARATI UNIVERSITY CALCUTTA-700 007

Employment Notice No. RB/35

Applications are invited for the post of Deputy Registrar in the scale of Rs. 1100-50-1600 (likely to be revised soon) plus usual benefits of contributory P.F., H.R.A. and D.A. as may be admissible. Higher initial pay may be considered in the case of exceptionally qualified candidate. (The post is at present temporary but likely to be made permanent).

Qualifications :—(a) Essential : Good Master's Degree of any recognised University; administrative experience for at least three years with experience of conducting University examinations. (b) Desirable : Administrative experience preferably as Deputy Registrar/Deputy Controller/Assistant Registrar/Assistant Controller of Examinations of any University or Head of any other recognised Institute not below the rank of a college. Age: not above 50 years as an 1.4.79, relaxable in case of specially qualified candidate. Four copies of applications in the prescribed forms (available from the University office) along with attested copies of mark-sheets from S.F./Matriculation/H.S. onwards must reach the Registrar by 30.4.79, together with a non-refundable fee of Rs. 5.00 only by crossed Indian Postal Order payable to RABINDRA BHARATI. Candidates who applied for the same post in response to employment notice No. RB/23 and RB/26 need not apply again. Their applications will be duly considered.

BANARAS HINDU UNIVERSITY

Advertisement No. 10/1978-79

APPLICATIONS are invited for the undermentioned posts. The benefit of Provident Fund/Pension, Dearness Allowances, House Rent Allowances and City Compensatory allowances are admissible according to University Rules. The retirement age of University employees is 60 years. The appointment will be made on two years probation for all permanent posts.

Higher starting salary within the grade is admissible to specially qualified and experienced candidates.

Applications will be entertained on the prescribed form duly supported with a Bank Draft or Crossed Indian Postal Orders for Rs 7.50 in favour of the Registrar, Banaras Hindu University towards the application fee. Application forms alongwith the leaflet of information will be supplied free of cost by the Registrar (Selection Committee Section), Banaras Hindu University, Varanasi-221005 on receipt of Re 0.55 paise stamped self-addressed envelope of 23 cms x 10 cms. size. Candidates called for interview for these posts will be paid actual Railway fare by the Second Class plus reservation charges for sleeper, if paid, and/or actual Bus fare from the present residence, bothways by the shortest route as per University Rules. No other expenses will be paid.

Applications for each post be sent separately alongwith attested copies of certificates in support of the qualifications and experience mentioned in the application be addressed to the Registrar (Selection Committee Section), Banaras Hindu University, Varanasi-221005.

Incomplete application in any respect will not be entertained for consideration.

Those who are in services should apply through proper channel. M.O. or cheque will not be accepted towards the application fee.

For the posts of Lecturers, other things being equal preference will be given to Scheduled Caste/Scheduled Tribe candidates who are considered fit.

Applicants may send their bio-data alongwith attested copies of all the certificates and details on plain paper alongwith the application fee of Rs 7.50 in Bank Draft/I.P.O. to avoid delay in case they do not get the prescribed form in time.

Last date for receipt of application is April 21, 1979.

Note :—Number of vacancies are tentative and can vary according to needs.

Institute of Medical Sciences

Grade

Professors—Rs 1500-60-1800-10-2000-125/2-2500 (NPA admissible only to medical graduates as per rules).

Reader—Rs 1200-50-1300-60-1900. (NPA admissible only to medical graduates as per rules).

Lecturer—Rs 700-40-1100-50-1600 (NPA admissible only to medical graduates as per rules).

Professor

(1) Obst. & Gynaecology (2) Psychiatry.

Readers

(3) Anatomy, (4) Biochemistry, (5) Physiology, (6) Pathology (7) Microbiology, (8) ENT, (9) Surgery (Cardio-Thoracic), (10) Surgery (Urology) (11) Surgery (Plastic Surgery).

Lecturers

(12) Physiology (two posts), (13) Medicine (Neurology) (14) Medicine (three posts), (15) Surgery (Neurosurgery), (16) Anaesthesiology (two posts).

Qualifications for the posts of Professors, Readers & Lecturers:

Essential : (i) MBBS or equivalent qualification recognised by the Medical Council of India and must be registered under the State/Central Medical Registration Act.

(2) *As detailed below against the subject/speciality. (3) (a) Five years teaching experience as Associate Professor/Reader in the subject/speciality in a Medical College (for the posts of Professor's only)

(b) Three years teaching experience as Assistant Professor/Lecturers in subject/speciality in a Medical College (for the posts of Reader only).

(c) The requisite recognised Postgraduate qualification in the subject and three years teaching experience as Tutor/Demonstrator/Resident in the subject/speciality of which one year should be after Postgraduate qualification for the posts of Lecturers only).

Desirable : (1) Research experience and publication, in the subject.

Essential Qualification: No 2—Post-Graduate qualification in the subject/speciality are as follows:

For Obst. & Gynaecology—MD (Obst. & Gynaecology/MSc (Obst. & Gynaec.), MD (Mid. & Gynaec.)/MS (Mid. & Gynaec.) MO/MRCOG, speciality Board of Obst. & Gynaecology (USA).

For Psychiatry—MD (Psychiatry)/MD (Psychological Medicine). MD/MRCP in Medicine with Diploma in Psychological Medicine speciality Board of Psychiatry and Neurology (USA).

For Anatomy, Physiology, Biochemistry—M.S./M.D., M.Sc. Ph.D., D.Sc. in the subject.

For Pathology—MD (Pathology or Pathology & Bacteriology or Pathology with Bacteriology), M.Sc. (Medical Pathology), Ph.D./D.Sc. (Pathology). Speciality Board of Pathology, USA, MRCPPath (Lond) or MCP (Australia) after Exam.

For Microbiology—MD(Bacteriology or Microbiology or Bacteriology with Pathology or Pathology and Bacteriology), M.Sc., Ph.D., D.Sc. in Microbiology or Bacteriology.

For ENT—MS (Oto-Rhino-Laryngology), speciality Board of Oto-Rhino-Laryngology (USA) FRCS (ENT).

For Surgery (Thoracic Surgery)—(1) M.Ch. (Thoracic Surgery) or (2) Speciality Board of Thoracic Surgery (USA), MS/FRCS in Surgery with 2 years of special training in Thoracic Surgery.

For Surgery (Urology)—(1) M.Ch. (Urology) or (2) Speciality Board of Urology (USA) MS/FRCS in Surgery with 2 years special training in Urology.

For Surgery (Plastic)—(1) M.Ch. (Plastic Surgery) or (2) Speciality Board of Plastic Surgery (USA) MS (Surg/Orth) FRCS in Surgery with 2 years training in Plastic Surgery.

For Surgery (Neuro-Surgery)—(1) M.Ch. (Neurosurgery) or (2) Speciality Board of Neuro-Surgery (USA), MS/FRCS in Surgery with 2 years special training in Neuro-Surgery.

For Medicine (Neurology)—(1) DM (Neurology) or (2) Speciality Board of Psychiatry & Neurology (USA) MD/MRCP in Medicine with 2 years special training in Neurology.

For Medicine (General) — MD (Medicine or General Medicine) MRCP Speciality Board of Internal Medicine USA.

For Anaesthesiology — MD / MS (Anaesth) Speciality Board of Anaesthesiology (USA), FFARCS (by examination).

NOTE : (1) Non-Medical candidates in Anatomy, Microbiology with M.Sc. Ph.D., D.Sc. qualification in the subject will also be considered.

2. Post No. 5. (Reader in Physiology) and one of the two posts at post No. 12 (Lecturer in Physiology) belong to Institute of Medical Sciences (PGIIM).

17. Professor in Dental Surgery

Qualifications : **Essential** : (1) BDS recognised by Dental Council of India (2) MDS, FDS or equivalent qualification recognised by Dental Council of India (3) Teaching experience as Reader in Dental Surgery for five years in a Medical College or a Dental College. **Desirable** : (1) Research & Publications in the subject/speciality. (2) MBBS degree.

18. Lecturer in Dental Surgery

Qualifications : **Essential** : (1) BDS recognised by Dental Council of India (2) MDS, FDS or equivalent qualification recognized by Dental Council of India; (3) Teaching experience as Resident/Clinical Registrar in Dental Surgery for 3 years of which one year should be after PG qualification. **Desirable** : (1) Research & Publication in the subject.

Faculties of Science & Humanities Grade

Professor—Rs. 1500-60-1800-100-2000-125/2-2500.

Reader—Rs. 1200-50-1300-60-1900. **Lecturer**—Rs. 700-40-1100-50-1600.

19. Professor of Applied Arts

20. Professor of Mathematics

21. Professor of Linguistics (School of Languages)

22. Professor of Management.

Qualifications

An eminent scholar with published work of high quality, actively engaged in research. Ten years experience of teaching and/or research. Experience of guiding research at Doctoral level.

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge.

23. Reader in Urdu

24. Reader in Journalism & Mass Communication (Spl. in Communication research preparation materials seminar publication).

Qualifications

Good academic record with a Doctoral Degree or equivalent published work. Evidence of being actively engaged in (i) research or (ii) innovation in teaching methods or (iii) production of teaching materials.

About five years experience of teaching and/or research provided that atleast three of these years were as Lecturer or in an equivalent position.

This condition may be relaxed in the case of candidates with outstanding research work.

25. Reader in History of Science and Technology (Deptt. of Ancient Indian History, Culture & Archaeology).

Qualifications

Good academic record with Master's Degree in Science or Technology or Ancient Indian History, Culture & Archaeology and with a Doctoral Degree or equivalent published work. Evidence of being actively engaged in (i) research or (ii) innovation in teaching methods or introduction of teaching materials.

About five years experience of teaching and/or research provided that at least three of these years were as lecturer or in an equivalent position.

This condition may be relaxed in the case of candidates with outstanding research work.

26. Lecturer in Philosophy/Indian Philosophy & Religion (Three posts).

27. Lecturer in Bengali.

28. Lecturer in Arabic (Modern Arabic).

29. Lecturer in Urdu (Mahila Mahavidyalaya Other things being equal preference will be given to women candidate).

Qualification : Essential

(1) A Doctor's Degree or research work of an equally high standard; and

(2) Consistently good academic record with first or high second class (B) in the seven point scale) Master's degree in a relevant subject or an equivalent degree of foreign university.

Having regard to the need for developing inter-disciplinary programme, the degrees in (1) and (2) above may be in relevant subjects.

Provided that if the Selection Committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard, it may relax any of qualifications prescribed in (2) above.

Provided further that if a candidate possessing a Doctor's Degree or equivalent research work is not available or is not considered suitable, a person possessing a consistently good academic record (weightage being given to M.Phil or equivalent degree of research work of quality) may be appointed provided he has done research work for atleast two years or has practical experience in a research/laboratory/organisation on the condition that he will have to obtain a Doctor's Degree or given evidence of research work of equivalent high standard within five years of his appointment, failing which he will not be able to earn future increments, until his fulfils these requirements ;

Explanation

1. Candidates for being eligible for recruitment to the posts of Lecturers must have a first or high second class (B in the seven point scale) at the Master's level and for determining High Second Class the mid-point between the minimum percentage of marks fixed by a university for award of second division and first division may be taken for determining consistently good academic record, an average of 55% may be expected at the two examinations prior to the Master's Examination

(irrespective of the marks obtained in any of the two examinations) or 50% marks in each of the two examinations separately.

2. A candidate who has obtained 52% marks at the Higher Secondary/Pre-University/Intermediate and 58% at the degree level would have an average of 55% and as such could be considered.
3. A candidate who has obtained 60% at Higher Secondary/Pre-University/Intermediate and 50% at the degree level would have an average of 55% and as such could be considered.

Institute of Technology

30. Reader in Mining Geology.

Grade : Rs. 1200-50-1300-60-1900.

Qualifications: Essential (1) Doctorate Degree in the subject or published work of an equally high standard. (2) A first or second class Master's degree in the subject or an equivalent qualification. (3) About five years experience in responsible position in teaching, research/industry. Desirable : (1) Research publications in standard journals. (2) Membership of learned bodies and societies.

Note :—Those who have obtained Doctor's Degree in the subject concerned will also be considered irrespective of the fact whether they have a post-graduate degree in the subject or not.

INDIAN INSTITUTE OF TECHNOLOGY KANPUR

KANPUR-208016

Advertisement No. 14/79

Applications are invited for a post of Junior Pilot Instructor (Gliders) in the scale of pay of Rs. 700-40-900-EB-40-1100-50-1300.

Minimum Qualifications

Holder of Glider Pilot's Licence with Open Rating upto 600 kg., 1000 launches as Pilot-in-command, with 250 hours of flying, out of which atleast 50 hours should be instructional flying.

Age : Below 35 years on 1.1-1979.

Nature of duties to be performed

To conduct flights for academic programme of the Department; to carryout flights for research and development in flight mechanics by taking aero toys; to hold abnito and advanced instructional flying to the members of the Gliding & Soaring Centre managed and pupported by the Department of Aeronautical Engineering; and to carryout Test flights of Prototype gliders,

The post is permanent and carries retirement benefits in the shape of CPF Scheme or CPF-cum-Gratuity Scheme or GPF-cum-Pension-cum-Gratuity Scheme as may be opted according to rules. The age of retirement is 60 years. During the first year, the appointment will be on probation. Besides pay, post carries allowances according to the Institute rules, which at present correspond to those admissible to the Central Government employees stationed at Kanpur. Candidates called for interview will be paid second class railway fare from the place of duty to Kanpur and back by the shortest route.

Application must be made on prescribed form obtainable free of charge from the Registrar of the Institute by sending a self-addressed unstamped envelope of 25 cm x 10 cm size.

Application accompanied by a postal order for Rs. 7.50 (Rs. 1.87 for SC/ST candidates) should reach the Registrar, Indian Institute of Technology, Kanpur-208016 (U.P.) on or before April 30, 1979.

Free higher education in Karnataka

The Karnataka State Government has made higher education free for students of all communities with an annual family income of Rs. three thousand six hundred from the next academic session. The students in this category will not be required to pay tuition and laboratory fee. State Social Welfare Minister, Shri L. G. Havanur said recently in Bangalore that fee concession available to students with annual family income of Rs. ten thousand would be withdrawn from the next academic year. The saving of Rs. thirty four lakhs effected in the budget of the state social welfare department would be used for award of scholarships to students belonging to backward communities and the balance will be invested as share capital in the

Scheduled Castes and Tribes Development Corporation. The State Minister said the Central Government would provide a matching grant to the Corporation.

Assam teachers set up research centre

The Assam College Teachers Association proposes to take up various educational development projects out of their funds. The Association will establish a library-cum-research centre at an estimated cost of Rs. six lakhs in the ACTA premises. The teachers will contribute for the centre from the amount they received as arrears on account of revision of their pay-scales. The Association plans to give more importance to academic and research programmes involving all the college and university teachers. There is also

a proposal to introduce regular annual lecture series by inviting prominent educationists for the benefit of teachers, students and community.

Osmania offers four-year engineering course

The Academic Council of the Osmania University at its recent meeting decided to offer four-year professional degree course in engineering and technology from the next academic session. The Council also approved the introduction of B.Ed. and M.Ed. correspondence courses. The specialisation in the field of chemistry at postgraduate level will now be offered at the two university colleges. The evening college of arts and commerce will be converted into a day college as most of the students were found to be not in service.

A list of Doctoral Theses Accepted by Indian Universities

PHYSICAL SCIENCES

Mathematics

1. Bera, Kachiram. On already unified field theory and problems singularities in general relativity. University of Calcutta.
2. Ganguly, Ashok. Some topics in summability. University of Saugar.
3. Khandualo, Devaraj. Some inclusion relations between summability methods. Berhampur University.
4. Nagore, C. Sri Hari. Studies in ordered semigroups. University of Madras.
5. Patel, Madhubhai Devachanddas. Some exact solution of stationary space time: Einstein's field equation. Sardar Patel University.
6. Sharma, Jai Kishore. Some contribution to transportation problems. Meerut University.

Operational Research

1. Madan, Sudhir. Cybernetic queueing systems. University of Delhi.

Statistics

1. Parikh, Ashok Manilal. Some problems in fractional factorial designs. M.S. University of Baroda.

Physics

1. Bhatnagar, Mahender Prasad. Determination of interdiffusion constant activation energy of solenium based alloys. Awadhesh Pratap Singh University.
2. Deshmukh, Sudha Pranawachandra. Proton magnetic resonance and ultrasonic studies of some binary liquid mixtures. Nagpur University.
3. Goel, Suresh Chander. Thermo-physical properties of some polymeric and monomeric solids. University of Delhi.
4. Guru, Nilamadhab. Studies in nuclear many-body problem. Sambalpur University.
5. Kubakaddi, S.S. Electron two phonon interactions in semiconductors. Karnatak University.
6. Mandal, Sasanka Sekhar. Microscopic theory of electron liquid and its applications to metals. Visva-Bharati.
7. Mahapatra, J.K. Pion-pion scattering. Utkal University.
8. Narayanan Nampoori, V.P. Study of spectra of some indium monohalide molecules. M.S. University of Baroda.
9. Pal, Sumita. Studies on some properties of ionic crystals in perfect lattices and lattices with substitutional defects. University of Calcutta.
10. Ratna Rani. Effect of hydrogen diffusion on the solid state properties of iron, cobalt and nickel. Kanpur University.
11. Sambhi Siva Rao, Konapala. Studies of surface layer effects on the dielectric behaviour of ferro electric and shear wave velocities in certain titanates. Andhra University.
12. Sengupta, Nandita. Study of collective states in nuclei. University of Calcutta.
13. Srimannarayana, K. Applications of holography and Speckle photography to some problems in elasticity. Kakatiya University.
14. Srinivasa Rao, M. Studies on first forbidden beta decay in Ga-72, Pm-149 and Ho-166. Andhra University.
15. Surinder Singh. Fission track dating and uranium distribution in pegmatites of Rajasthan State, India. Punjabi University.
16. Verma, Narendra Kumar. Theoretical investigations of the performance of optical systems. Punjabi University.

Chemistry

1. Agarwal, Murlidhar. Study of preseodymium and neodymium complexes of carboxylic acids. University of Saugar.
2. Arvind Singh. Study of the complexometric behaviour of substituted and unsubstituted phenyl thioacetamides. Kanpur University.
3. Bharat Bhushan. Thermal and other physico-chemical studies on some metal complexes of N-aryl substituted dithiocarbamates and their reactions with bis (II-cyclopentadienyl)

titanium (IV)/zirconium (IV) dichlorides. University of Delhi.

4. Bhattacharya, Sukla. Studies in alicyclic compounds: Koch-Haaf carboxylations and bridge head reactivity. Visva-Bharati.

5. Bhattacharyya, Kalyan. Studies on the effects of dicyandiamide and related inhibitors on the acid corrosion of nickel. University of Delhi.
6. Bohidar, Neeta. Role of irradiation in the thermal decomposition of barium perchlorate and barium perchlorate-barium chloride mixtures. Utkal University.
7. Chaudhury, Satyanarayan. Studies on the oxidation of hydrocarbons. University of Calcutta.
8. Ghosh, Asim Kumar. Indole alkaloids and their transformations. University of Calcutta.
9. Goyal, K.C. Studies on cyclopentadienyl, indenyl and cycloheptatrienyl molybdenum (VI)-oxo compounds and their derivatives. University of Delhi.
10. Gupta, Arunkumar. Synthesis and structural studies of bimetallic dithiodiselenocyanate and their complexes. Avadh University.
11. Gupta, Hari Om. Studies on protein metabolism and nutritive quality in maize. Meerut University.
12. Hazela, Basudev Prakash. Coordination complexes of some group (IV) metal halides and alkoxides. Kanpur University.
13. Khan, Mohammed Isreal. Synthesis of dyes and analytical applications of some compounds. Awadhesh Pratap Singh University.
14. Krishnan, P. Structural and solvent effects on hydrolysis of esters. University of Madras.
15. Maiti, Saurindranath. Studies on vinyl polymerization using initiator systems containing long chain quaternary salts. University of Calcutta.
16. Mandal, Santosh Kumar. Studies on metal complexes of some hetero donor ligands. University of Calcutta.
17. Manju. A contribution to the chemistry of proteases and related synthetic experiments. University of Delhi.
18. Mehrotra, M.M. Castor oil prostaglandins: Synthesis of PGF α , HOMO PGF₁ α , 9,11-etheno PGH₁ and 9,11-etheno homo PGF₁, Indian Institute of Technology, Kanpur.
19. Mnkhopadhyay, Sibabrata. Studies on the rearrangement in triterpenoids and naturally occurring benzopyrroles and their reactions. University of Calcutta.
20. Nigam, Alaka. Studies on inorganic constituents (Na, K, Mg and PO₄) in sugarcane juices and their fate during the process of clarification. Kanpur University.
21. Radhakrishna Pillai, K.M. Studies on synthetic drugs: Agents acting on the central nervous system. Meerut University.
22. Rajendra Prasad, Yalamanchili. Chemistry of natural products. University of Saugar.
23. Satyamurthy, N. Synthesis and conformational analysis of some substituted 4-thianones and 4-thianols. University of Madras.
24. Shagotra, Buta Ram. Thermodynamics of molecular interactions in binary liquid mixtures of non-electrolytes. Punjabi University.
25. Soundararajan, N. Studies on the synthesis and chemistry of theino (2,3-b) quinoline. University of Madras.
26. Suri, S.C. Addition reactions of chlorosulfonyl isocyanate. Indian Institute of Technology Kanpur.
27. Vimal Kishore. Studies in the synthesis of polypeptides with possible biological activities. Kanpur University.

Engineering & Technology

1. Das, Jiban Kishore. A new method of starting single phase induction motor. Sambalpur University.
2. Pal, Manabendranath. On the application of control theory and mathematical programming in systems management. University of Calcutta.
3. Ramayya, T.V. Studies on vegetable tannins. University of Madras.

4. Shenoy, S.C. Studies of oxidative dehydrogenation of n-butane over bismuth molybdate—aluminium phosphate catalyst. Indian Institute of Technology, Kanpur.

5. Shrivastava, Tarkeshwar Prakash. Studies on block copolymerization of styrene and acrylamide and other related systems. Kanpur University.

6. Srinivasa Rao, M. Evaluation of layered system functioning in pavements with different base courses and subgrades. Sambalpur University.

7. Venkateswarlu, Thommandra. Time dependent behaviour of prestressed and reinforced concrete members and structures. Andhra University.

BIOLOGICAL SCIENCES

Anthropology

1. Navnit Singh. Genetics of human body composition: A morphological-cum-biochemical approach. Punjabi University.

2. Swinder Pal Singh. Growth pattern from 4 to 20 years of male Rajput Gaddis-Himalayan tribe. Punjabi University.

Biochemistry

1. Bandyopadhyay, Maitreyi. Studies on glutamine synthetase activity in relation to malignancy. University of Calcutta.

2. Fawade, Madhukar Marutirao. Tissue levels of acid and alkaline phosphatases and mixed function oxidases during pesticide intoxication. Marathwada University.

3. Illanthiraiyan, P. Biochemical studies on some blood proteins in diseases of urinary tract. University of Madras.

4. Nag, Sumitra. Biochemical studies on spermatozoal enzymes. University of Calcutta.

5. Namasivayam, K. Mohan. Mycotoxicoses: Studies on secondary metabolite (S) of *Aspergillus terreus*. University of Madras.

6. Oommen, Anna. Metabolic studies in the central nervous system: The metabolism and functions of monoamines in the mammalian central nervous system. University of Madras.

7. Rajagopal, G. Studies on metabolism in ethylene glycol toxicity. University of Madras.

8. Rose, Ida. Metabolism of biphenyl derivatives in albino rats. Punjab Agricultural University.

9. Saravanan, C.S. Endocrine and biochemical aspects of breast neoplasia. University of Madras.

Microbiology

1. Narayana Rao, N. Studies on the post-harvest physiology and spoilage of mango. M.S. University of Baroda.

Botany

1. Abdul Rauf. Correlative aspects of growth and metabolism in seed development of some legumes. Meerut University.

2. Ajmani, Manju. Application of electrophoretic techniques in the assessment of genetic variants of human haemoglobin and chromosome inter-relationship in certain plant taxa. University of Calcutta.

3. Gangadharan, C. Studies on induced mutation in rice. *Oryza sativa* L. Utkal University.

4. Handoo, Jeewan Kumar. Ecological and production studies on some typical wetlands in Kashmir. University of Kashmir.

5. Nikhil Kumar. Biochemical aspects of water pollution: Effects of polluted irrigation water on crop plants. Meerut University.

6. Pande, Prakash Chandra. Morphological, anatomical and ontogenetic studies in the iridaceae. Meerut University.

7. Sharma, Naresh Chander. Cytogenetic studies involving triticales and wheat. Meerut University.

8. Sharma, Om Prakash. Morphological, anatomical and developmental studies in some species of *Cyperus*. Meerut University.

9. Singh, Prabhu Dayal. Studies on the differentiation and development of male gametophyte in the species of *Vitis* and *Zizyphus*. Kanpur University.

10. Srivastava, Urmila. Studies on the pollination ecology of some nocturnal cucurbits. Awadhesh Pratap Singh University.

11. Suryanarayanan, T.S. Studies on photosporogenesis in some fungi. University of Madras.

Zoology

1. Bhide, Sudha Anand. Studies on the alimentary canal of some Indian bats. Nagpur University.

2. Biswas, Shyamrup. A study of drug beetles (Coleoptera: Scarabacinae) of Meghalaya. University of Calcutta.

3. Chakrabarti, Bulbul. Antifertility, toxicity and other biological property studies on the extract of the plant *Aristolochia indica* (Roof). University of Calcutta.

4. Chauhan, Balvantsinh Chandrasinh. Studies on some aspects of histophysiology of certain endocrine glands related to reproductive cycle of the Indian house crow, *Corvus splendens* Vieillot. M.S. University of Baroda.

5. Das, Kalyani. Metabolic studies in the brain of young and old male garden lizards, *Calotes versicolor* (Daudin). Berhampur University.

6. Kapur, Kanwal. Reproductive performance of major crops in natural and confined waters. Punjab Agricultural University.

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JAMIA MILLIA ISLAMIA**JAMIA NAGAR, NEW DELHI-110025****Advt. No. 1/79-80****Dated: 28-3-1979**

Applications on the prescribed form which can be had from the Registrar's Office on any day (except Sundays and Holidays) between 10:00 A.M. to 12:00 Noon or by sending a self addressed and duly stamped (25 Paise) envelope of 10×23 cm., are invited along with the postal order of Rs. 3/- (Rupees three) for the following post so as to reach the Registrar by 1:00 P.M. on April 21, 1979.

Ability to teach in Urdu and Hindi is a desirable qualification for the said post the functional knowledge of these languages is essential.

D A., C.C A., H.R A., P.F., Gratuity, Pension and such other facilities will be given as per Jamia's rules.

Relaxation in any of the qualifications may be made on the recommendation of the Selection Committee in exceptional cases.

One Reader (Grade: Rs. 1200-1900); in Education (Permanent)

Good academic record with a first or high second class Master's Degree of an Indian University or an equivalent foreign qualification: a Doctorate Degree or equivalent published work in the subject concerned, and independent published work of a high standard in addition to the published work referred to above and at least 5 years experience of teaching Hons./Post-graduate classes or 10 years experience of teaching undergraduate classes.

IMPORTANT

Incomplete applications in any form i.e. without attested copies of certificates, degrees, diplomas, mark-sheets, prescribed application fee and on plain paper will not be entertained.

**Zamir Hasan
OFFG. REGISTRAR**

**BHAGALPUR UNIVERSITY
POSTGRADUATE DEPARTMENT
OF BOTANY**

BHAGALPUR-812007**Dated the 22 March, 1979.**

Applications are invited for the following posts sanctioned by the University Grants Commission under the 5th plan period.

1. Garden Superintendent—One**Qualifications**

Ist or IInd class B.Sc. (Ag.) with Horticulture or B.Sc. with Botany. Candidates should have at least two years experience of working in some Botanical Garden or herbarium.

OR

M.Sc. Ist or IInd class in Botany/Agricultural Botany with specialization in Horticulture/Taxonomy.

Scale of Pay : Rs. 400-40-800-50-950

2. Photographer-cum-artist—One**Qualifications**

Matriculate with Science having

Diploma from recognised Institution in photography or designing. Preference will be given to candidates having practical experience of photography or having done the work of artist.

Scale Pay : Rs. 348-13-465-EB-15-570.

3. Culture Technician—One**Qualifications**

Intermediate with Biology having

some experience of preparing culture media and familiarity with other microbiological techniques.

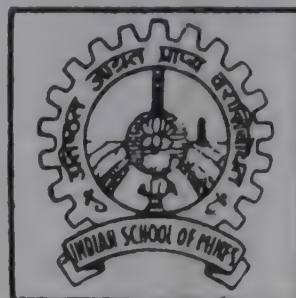
Scale of Pay : Rs. 348-13-465-EB-15-570

Last date for the receipt

of applications : 20th April, 1979.

K.S. Bilgrami

**Prof. & Head of the P.G. Deptt.
of Botany**



Indian school of Mines

DHANBAD-826004**No. 615126/79****March 29, 1979****Admission to Advanced Diploma Courses 1979-80**

Applications are invited from candidates possessing the requisite qualifications for admission to the following ONE-YEAR Advanced Diploma Courses being offered by the Indian School of Mines, which is a deemed to be a University under the University Grants Commission Act:

- (I) Advanced Diploma in Mine Surveying (offered by the Deptt of Min Engg).
- (II) Advanced Diploma in Mining Electronics and Telecommunication (offered by the Deptt of Electronics and Instrumentation, with financial support from Electronics Commission).

2. ELIGIBILITY REQUIREMENTS

- (A) (i) Diploma in Mining/Surveying/Civil Engg (or equivalent) with one-year experience in underground coal/metal mine surveying (for **Course-I**); (ii) Diploma in Elec/Electronics Engg (or equivalent) with one-year experience in mines (for **Course II**)

In each case, the candidate should have obtained at least 60% marks in the qualifying exam, relaxable to 50% for sponsored candidates.

OR

- (B) In case of sponsored candidates only, Higher Secondary (with Physics, Chemistry and Mathematics), with—

(i) Mine Surveyors Certificate of Competency (granted under the Mines Act) and one year experience as Surveyor after obtaining the said Certificate (in the case of Course I); and

(ii) with Electrical Supervisor Certificate of Competency (valid for underground mines, granted under the Indian Electricity Act) and five years experience in underground mines (in case of Course II).

3. Preference will be given to sponsored candidates and, amongst them, to persons holding a diploma as at 2 (A) above. Sponsorship in this context means retention of lien on post and grant of suitable allowance. Application of sponsored candidates should carry suitable endorsement by the employer.

4. PROCEDURE FOR APPLYING

Application forms along with the relevant information bulletin can be obtained by sending a Crossed Postal Order for Rs. 5/- (Rupees Five only) made payable to the Registrar, Indian School of Mines, Dhanbad-826004.

Last date for Receipt of Completed Applications: May 31, 1979.

**S. P. VARMA
REGISTRAR**

University lews

1 June 1979

A FORTNIGHTLY CHRONICLE OF HIGHER EDUCATION & RESEARCH MAY 1, 1979



Shri K. R. Narayanan, Vice-Chancellor, Jawaharlal Nehru University, Dr. Sarup Singh, M.P. and Prof. M.V. Mathur, Director, National Staff College for Educational Planners & Administrators at the inaugural session of the National Conference of Academic Librarians held recently in New Delhi.

S. N. D. T. WOMEN'S UNIVERSITY

1, NATHIBAI THACKERSEY ROAD, BOMBAY 400020

Applications are invited on prescribed forms available from the University Office on payment of Rs. 5/- (by M.O. or cash) for the following posts to be filled in at the S. N. D. T. Arts & Commerce College for Women, Bombay, so as to reach the undersigned before May 21, 1979.

A. Post-Graduate Departments	Medium	No. of posts
READER IN		
(1) Economics (2) Music and (3) Art & Painting	Marathi/Gujarati	One post for each subject
B. College level		
LECTURER IN		
1. Economics	(a) Gujarati (b) Gujarati/Marathi	Two posts
2. History	(a) Gujarati (b) Marathi (with Politics)	Two posts
3. Sociology	(a) Gujarati (b) Marathi	Two posts
4. Commerce	English	One post
C. TUTOR IN		
Instrumental Music	Marathi/Gujarati	One post

Qualifications

Reader : Good academic record at Bachelor's & Master's level in the subject concerned, namely first or high second class, with a doctoral degree or equivalent published work in the subject concerned. Evidence of being actively engaged in (i) research or (ii) innovation in teaching methods or (iii) production of teaching materials. 5 years' experience and/or research provided that at least 3 of these years were as lecturer or in an equivalent position. This condition may be relaxed in the case of candidates with outstanding research work.

Candidates with the following qualifications may also apply for the posts mentioned below.

1. **Reader in Art & Painting:** Diploma in Fine Arts with Art Master's Certificate of Government of Maharashtra (formerly of Bombay State) in first or second class at both examinations. Experience of teaching drawing and painting in a Government recognised Institution of Art for a period of at least 7 years. Some research work to the credit in the subject of Art & Painting.

2. **Reader in Music:** Sangeet Alankar in first or second class and Sangeet Praveen or Sangeet Acharya (by thesis) from Akhil Bharatiya Gandharva Mahavidyalaya Mandal, Bombay.

OR

Sangeet Nipun in first or second class and Sangeet Acharya of Bhatkhande Sangeet Vidyapeeth, Lucknow.

5 years' experience and/or research provided that at least 3 of these years were as lecturer or in an equivalent position. This condition may be relaxed in the case of a reputed musicologist and performer.

LECTURER

- Consistently good academic record with at least first or high second class at the Master's and Bachelor's level in the subject concerned or an equivalent degree of a foreign University; and
- An M.Phil degree or a recognised degree beyond the Master's level or

published work indicating the capacity of a candidate for independent research work.

Notes

(1) Provided that if the Selection Committee is of the view that the research work of a candidate as evident either from his/her thesis or from his/her published work is of very high standard, it may relax any of the qualifications prescribed in (a) above.

(2) Provided further that if a candidate possessing the qualifications at (b) above is not available or not considered suitable the college, on the recommendation of the Selection Committee may appoint a person possessing a consistently good academic record on the condition that he/she will have to obtain an M.Phil. degree or a recognised degree beyond the Master's level within five years of his/her appointment, failing which he/she will not be able to earn future increment until he/she obtains that degree or gives evidence of equivalent published work of high standard.

Tutor in Instrumental Music : Matriculation or equivalent qualification but reputed as a performer in the field of music or holding a diploma or a degree (Sangeet Visharad) in Music of any Music Institution recognised for the purpose.

Salary Scales

READER: Rs. 1200-50-1300-60-1900 plus admissible allowances (Total initial emoluments about Rs. 1700/- per month)

LECTURER: Rs. 700-40-1100-50-1300-Assement-50-1600 plus admissible allowances (Total initial emoluments about Rs. 1100/- per month)

TUTOR: Rs. 500-20-700-25-900 plus admissible allowances (Total initial emoluments about Rs. 800/- per month)

Notes

- Only suitable candidates will be called for interview.
- Other things being equal, preference will be given to candidates from Scheduled Castes/Scheduled Tribes, Other Backward Communities.

(c) Higher starting salary may be considered in exceptional cases.

(Smt.) Kamalini H. Bhansali
REGISTRAR

SAMBALPUR UNIVERSITY

JYOTI VIHAR : BURLA

Advertisement No. 10728/TDS.

Dated. 11.4.79

Applications in the prescribed forms are invited for the following teaching post in the University Post-Graduate Departments at Jyoti Vihar, Burla.

- Lecturer—One in Oriya
- Scale of Pay
Lecturer—Rs. 700-40-1100-50-1600/-
- All the posts carry usual dearness allowance and C.P.F.-cum-gratuity benefits as would be determined by the University from time to time,
- The age of retirement is sixty years.
- Qualification

LECTURER

- A consistently good academic record with first or high second class Master's Degree in the relevant subject or Equivalent foreign Degree with grade B+ or 55% of marks.
- A Doctorate Degree of Published work of equally high standard.

In case a suitable candidate possessing a Doctorate Degree or equivalent published work is not available, a person possessing a consistently good academic record (due weightage being given to M.Phil or equivalent degree or research work of quality) may be appointed on the condition that he will have to obtain a Doctorate Degree/Produce evidence of published work of equivalent high standard within 5 years of his appointment failing which he will not be able to earn future increments until he fulfils this requirement.

Seven copies of the application forms will be supplied from the University Office to each candidate in person on cash payment of Rs. 10/- (Rupees ten) only. Candidates intending to receive forms by post are required to send (a) Crossed Postal Order of Rs. 10/- payable to the Finance Officer, Sambalpur University, Jyoti Vihar, Burla (b) a self addressed envelope (23cm x 10cm) with postage stamps worth Rs. 3.30 p affixed to it with the words "APPLICATION FORM FOR TEACHING POSTS IN SAMBALPUR UNIVERSITY" super-scribed on it. Money Order/Cheque will not be entertained.

The last date of receipt of applications in the Office of the University at Jyoti Vihar, Burla, Sambalpur (Orissa) is 9.5.79. The candidates will be required to appear for an interview before a Selection Committee at their own expenses.

Issue of this advertisement does not make it binding on the University to make the appointment.

All communications should be addressed to the Registrar by designation only.

REGISTRAR

UNIVERSITY NEWS

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1979

*A Fortnightly Chronicle
of Higher Education* Price
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*Opinions expressed in the articles
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not necessarily reflect the policies
of the Association*

Hony. Editor : ANJNI KUMAR

Convocation sans Degrees-Diplomas

Contributed by Shri I.J. Patel, Vice-Chancellor,
Gujarat Agricultural University

A unique convocation was organised in Ahmedabad in the second week of April 1979 for seventeen young people after completion of their seven years' non-formal graduation course. The institution that imparted this education and arranged their first convocation in *Bhav-Nirzar* (भाव निरझर) on Jodhpur Tekra just opposite the Satellite Television Experiment Station and S.A.C. at Ahmedabad. No degrees or diplomas were presented. No dignitaries were invited for the convocation address. The young dikhadharis (दीक्षाधारीज) were advised by their Guru, the founder and the soul behind the institution, Shri Pandurang Athvale Shastri to follow the path of God and religion, to be diligent farmers, honest citizens as well as loving neighbours in their villages and transfer silently the message of the Bhagwadgita to the masses and keep the torch of Indian civilization alight.

These young people were chosen from farmers' families in Kutch, Saurashtra and other areas for a seven years' course after primary. They were given to understand, when selected, that after this education, they will go back to their villages, to their parents' profession of farming and as enlightened farmers devoted to God and religion will work as torch-bearers of learning, wisdom and goodwill for mankind. They were to pay no fees. Everything was provided through God's magnificence. The subjects taught were English, Sanskrit, Hindi and Agriculture. On the sprawling farm of the institution, the boys had to work for 2½ hours everyday and learn all operations of agricultural pre-harvest, mid-harvest and post-harvest technology. Learned professors and scholars were invited to teach them or, to put it better, bring home to them the beauties of Shakespeare and Shelley, Kalidas and Bhavbhuti, Gita and Upanishads, Ramayana and Mahabharat, Prem Chand and Tulsidas, Mira and Nursey Mehta. A broad based understanding of the latest in science and technology was also provided to them through informal talks, discussions and lectures. They were exposed to the modern world while at the same time being critically aware of the rich Indian heritage and culture.

We talk of delinking degrees and diplomas with employment. Here is an example where education is for the sake of education, knowledge or *vidya* for the sake of *vidya* itself. No other expectations are aroused or nurtured. You get your education to be a happy village farmer and make your neighbours also happy. We talk of stalling the migration of educated young from the rural to the urban areas. Here is a positive programme of action of planting young people back in their own soil where they had their own roots. As sons of the soil, they are enjoined to work for the soil and its uplift. The base is devotion, faith in God and an unswerving confidence in self-reliance.

The convocation was attended literally by thousands—seven, eight thousand *swadhyayis* (स्वाध्यायीज) each day. These *swadhyayis* do not expect anything from the institution by way of lodging, boarding or travel. The very basis of the Swadhyaya Mandal is that each one looks after himself-herself. They bring their own food, make their own arrangement for lodging and travel. Even when they have their periodical *milans* (मिलन)—meeting, this is the system followed so that no expensive arrangements are needed.

The Swadhyaya Mandal founded by Shastriji has several thousand members. Each *swadhyayi* is expected to devote a month in a

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Role of Higher Education in the Process of Development and Change

M. R. Apparow*

Higher Education is in the process of change and it needs a new direction. The Academic community should play a more leading role in the process of development and planning. They should exert sufficient pressure through a philosophy of service and extension in the community around and show models of developments to others.

In all developing countries the fruits of knowledge, research and new skills have yet to reach millions of people who need it, who will be profited by it and whose contribution to the productive apparatus is immense. In this age of highly advanced science and technology, we are talking of appropriate technology for the rural areas, so that they are not deprived of the where-withall of their existence by the mighty currents of sophisticated production techniques. Appropriate technology is a means to promote individual and community self-reliance through a swadeshi movement.

Not only in this country but in all other developing countries the cities and the urban areas have gained prominence all these days and derived the advantages of the two decades of development initiated by the United Nations and other International agencies. Now we have changed our outlook and we are seriously thinking of Rural Development which will arrest the culture of too much urbanisation and its attendant evils. So all national governments in Asia, Africa and South America are concerned with the welfare of the common man through various means including changes in the traditional systems of Formal Education, which includes Higher Education also. We should create innovative learning systems, within the goals of rural development system, which can extend the benefits of knowledge and modern skills to the nook and corner of rural areas in various parts of the country.

As the U.G.C. Pamphlet "A Policy Frame for Development of Higher Education in India" points out, "If the University system has to discharge adequately its responsibilities to the entire educational system and to the society as a whole, it must assume extension as the third important responsibility and give it the same status as research and teaching". All Universities and colleges should develop close relationships of mutual services and support with their local communities.

In order to discharge its responsibility to the education system and to the society as a whole, the University and colleges must assume adult education and extension as an important responsibility and give it the same status as teaching and research.

These should be made an integral part of the objectives and functions of the university/college.

It is important to establish an organic link between adult education/extension and university curricula. The former should not be looked upon merely as a welfare activity for the deprived social groups, but as a process of interaction with the society leading to valuable learning experience and as a means for making higher education relevant to the needs of the society and oriented towards a solution of existing problems. Without such interaction on a continuing basis, the Universities will remain isolated from the society and their programmes out of tune with the reality around them."

The younger generation is to be put on the new path and the illiterate villagers in the rural areas should be liberated from their age old customs and habits. The age group 15-35 is best for reconstruction phase as they are the target groups which face the difficulties for a variety of reasons. The reasons as we know are socio-political and economic nature. We in Andhra University conducted a few experiments in regard to Non-Formal Education and extension in rural communities.

The Department of Adult and Continuing Education, Andhra University, Waltair has organised a training camp for 50 participants who comprise 12 instructors 30 neo-literates from 14 villages in Anandapuram. This was organised in February 1979 with the cooperation of District Medical and Health Department, Regional Health and Family Welfare Training Centre, Seethammadara and Primary Health Centre at Revidi and Field Publicity Department. This camp is unique and novel in the sense that not only lectures were given but practical work like construction of sanitary pits were undertaken in Palavalasa Village where filariasis was reported. Useful films on Sanitation, Adult Education, Family Welfare and baby care were shown. A baby show and also health examination was conducted and medicines were distributed to 50 sick children in the age group of 0-5 years.

The following items in regard to health awareness were taught and some were practised to have a demonstration effect.

1. Environmental Sanitation.
2. Personal Hygiene.
3. Common Health Problems in that area and district.
4. Health Services.
5. Relevant Health Laws.
6. MCH Services.

*Vice-Chancellor, Andhra University, Waltair.

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Internal Management of Universities

—BITS Experience

T. S. K. V. Iyer*

June 19

Change and innovation are the *raison d'être* of a dynamic organisation. To sustain innovations the management of such organisation must have the capacity for quick adaptation. This article deals with some innovations introduced at BITS with particular reference to how they are managed and how the processes of operation evolved. To keep within limits of space available, only a few innovations have been selected and the emphasis is on the management—the experience, and the process of operation. BITS has realised that while concepts are important it is only through operation that an organisation learns and in this process new ideas got thrown up.

Planning for changes through participation

Examination Reform in the universities has been held out as the innovation that is most important for keeping the universities dynamic. BITS like all other universities had the same view. In 1964, when BITS came into being, the faculty who already had an experience of the external examination system as they were in affiliated colleges voluntarily agreed to have internal evaluation. For the next five years the examination results were declared based upon continuous evaluation by the teacher and the cumulated percentage of marks. A letter grade was also given on a rigid percentage basis, the latter being done at the Registrar's Office. These letter grades therefore were only pseudo letter grades. Thus 'excellent' students in English could get a 'C' grade while 'excellent' students in Mathematics could get an 'A' grade. Therefore in 1970 quality letter grading and the unit system were fully introduced. It was the responsibility of the teacher who taught a course to turn in grades at the end of the semester, based on the marks obtained by continuous evaluation. Before introducing the qualitative letter grading, opinion from all the departments were sought in regard to their views, the problems they foresee and also suggestions regarding implementation. These were sorted out by Curriculum committee which was already existing. Extensive discussions took place among the faculty in various workshops and seminars regarding the process of grading. It was the desire of the faculty that a guideline should be prepared for teachers. These guidelines were actually a follow up of the regulations which were passed by the Senate when the letter grading system was introduced. Involvement of the students in the discussion process naturally emphasized the credibility angle and one of

the most important steps taken to ensure this credibility was the decision to show the valued answer books soon after a test to the concerned students and discuss the marks awarded. It is worth noting in passing that these regulations became operative not only for students who joined thereafter but also for those who were already in the Institute. For purposes of bringing the ongoing students into the mainstream, a conversion to CGPA of the marks obtained upto that point of time was necessary. Discussions with faculty and students and a write up in the student press preceded the finalisation of the procedure. Involvement of all groups intimately concerned with the operation of the university brought about a general satisfaction.

Involvement of faculty and students at the formulation stage resulted in active interest in the implementation,

Feedback and pragmatic modifications

With the experience in the next three years (1970-73) of operating the internal evaluation system many new ideas came up. Frankly this was the period of ferment. Some of the ideas were in a forward direction while some were not so. It also became necessary to have detailed discussion with the students regarding the operation.

Some of the resulting modifications are now presented. One such was related to the cumulative aspect of CGPA (Cumulative Grade Point Average). When a student repeats a course, the grade he received is cumulated with the grade he had received the first time. Some students demanded that the latter grade should replace the grade obtained the first time. Others felt that it was a concession to students who were after all repeating the course. BITS soon became wise enough to realise that this fine detail was not worth fighting. Thus the substitution of the first grade by the new grade when a student repeats a course was introduced in 1974. BITS which had boldly introduced the quality letter grading system in 1970 was now wise enough to accept this modification. This example is mentioned to highlight the need for flexibility in the attitude of an innovator when experience indicates a need to modify his initial concepts. Thought and action should have a correspondence.

A follow up in management was the setting up of 'the grading review committee' which consisted of both students and faculty. Report of this committee is available as an internal document. The committee strongly recommended a variety in the nature of the various tests to bring out different

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capabilities of students. The other suggestion which was sincerely and seriously considered and rejected by the committee was the award of letter grades for each test. Regarding variety in tests suggestions made were short time quizzes, open book test, term paper etc. Much time is consumed in policing the examinations and setting up committees to examine mal-practices. This is easily obviated if the open book system is followed. With the experience gathered in these areas, the guidelines teachers were suitably updated to incorporate the suggestions of a number of teachers. Some of these were introduced as directions in the academic regulations.

Directions and control

It is relevant at this stage to indicate additional checks and balances which came to be built into the system. One is the handout given by the teacher to his students for the course in the beginning of the semester where he declares the different types of tests, their dates, weightage, in addition to the coverage of the programme. The second is the facility given to a student to apply to the examination committee for scrutiny of grade awarded to him in a course or any detail thereof. The third is a redefining of the role of the examination committee. By the statutes BITS, of the examination committee declares the 'examination' results. In the internal evaluation system the role was suitably redefined by which the Examination Committee is provided with the teacher's analysis of the distribution of grades in a course. Statistical information is also obtained through the computer about the past performance in terms of number of students in various ranges of CGPA of the students taking the concerned course. With the Statistical data on the past performance and assuming that the students are not deviating too much in their studies—a quick comparison of the grade distribution is made for the concerned course and the results declared. Any serious deviations are noted down for later interaction with the concerned teacher who could exchange his own experience of what happened in a particular semester in that course. In the matter of applications for scrutiny by the students, information is sought by the examination committee from the student concerned and from the teacher of that course. The role of the Examination Committee is to ensure that there has been fair play in the matter. While the decision of the teacher in regard to the award of grades is not under question, the examination committee has to ensure that there has been fairness in dealing with all the students and inadvertent errors are to be corrected. The experience of the examination committee in operating the system along with suitable suggestions to teachers in the interest of improving its effectiveness is found in an internal confidential document which was distributed to all teachers. The suggestions embodied in it will help the faculty to maintain their records in a convenient and common format and save their time on such routine matters.

Clause 13 of the academic regulations gives details on the operation of the course and the award of the grade by a teacher and enjoins a responsibility

on the student also. In this connection two watchdog committees were formed—one consisting of students and the other consisting of faculty to be on the alert about any difficulties developing during the operation of the system.

Innovation accelerator effect

BITS soon realised that examination reform is not an end in itself and it could be a very powerful means for many other innovations. Specific attention is drawn to the introduction in 1972 of the five-year integrated programmes at BITS. It is not the intention here to describe this in detail. The salient features of the five-year integrated programmes are: an integrated approach to engineering, science and humanities education with a number of common courses in foundation years i.e. the first three years. Some of the common foundation courses are: workshop, graphics, linear algebra, computer programming, introduction to management and some basic courses in mathematics, science and engineering sciences. In the case of courses in humanities the student is given the facility to select a specified number from a list of such courses under a requirement of humanities electives. Such structuring of the programme gives the student an additional flexibility so that he can transfer from one programme to another without loss of time. From the point of view of the teacher basic courses in the foundation years are the same whatever be the discipline of the student. The faculty realise a work satisfaction as the students voluntarily came to the course with considerable motivation.

Implementation strategy

An interesting consequence of this educational restructuring is the introduction of the 'E' grade which is the lowest grade re-placing the earlier 'F' grade which was a failure grade. 'E' grade is an acceptable grade. This was introduced in May 1975, by which time a tremendous amount of involvement in the educational operation has taken place both among the faculty and students at BITS. The change over from F to E was done after considerable discussion spread over 15 months in forums such as the student Faculty Committee and student forums. Both students and faculty were seriously concerned at that time about the consequence of a student getting too many E grades. To quote the students: "Do you think we have come to BITS spending our parents money to collect as many E grades as possible." The faculty while conceding the point felt that there should be some check on the number of E grade which a student can get in a semester. It was finally agreed that no student can get more than one E grade in every semester. 'The educational philosophy of the Institute interlinks and at the same time distinguishes between performance of a student in a single course and his overall cumulative performance'. The possibility of the student not taking the E grade seriously was considered and an additional report of the teacher called NC (Not Cleared) was introduced. Reg. 18.1 says "Where a student continued to remain registered in a course but gave the instructor no opportunity to evaluate him by absenting himself

from all quizzes/tests/examinations and other components of evaluation, or by appearing in the same for the sake of appearance without applying to the task of answering the questions, or by submitting a blank script (answer-book), this event will be reported as 'Not Cleared' (NC). The student so reported would have to register in the same course again at the earliest opportunity". A student getting more than one E grade will come under the purview of a newly constituted Senate Committee called Academic Counselling Board. Regulation No. 24 defines the expected minimum performance and progress and regulation 25 gives the role of the ACB in this connection. The ACB contains both students and faculty as full members.

Further Innovations—Interaction with the Environment

BITS also realised the inadequacy of the ivory tower attitude of universities in relation to training students for their future profession. In this context BITS experience of operating the practice school is described elsewhere. The practice school experience has also resulted in the faculty at BITS being able to identify relevant research projects which can ultimately be done in a university and which have relevance in connection with national development.

Function based administrative restructuring

With the introduction of innovations such as internal evaluation integrated programmes, Course Development, practice school and directions of research, involving faculty and students at the planning as well as implementation stages, BITS realised that the educational administration should be restructured. This was formalised in 1976 with the introduction of seven functional divisions headed by deans who are faculty members. These faculty were already playing a major role in the implementation of the innovations.

The role of the teachers also got well defined in terms of Institute objectives as well as development and growth of faculty. The faculty could join any one of the functional divisions on a voluntary basis. While BITS is certainly grateful for the challenging roles that the faculty have taken upon themselves, BITS is also cognisant as an administration of its own responsibility in redefining a reward system. Thus at BITS, a faculty can put in efforts to further the objectives of the organisation, and his perception of his role and his achievement contribute to his reward directly. Thus at BITS it is not merely the number of research papers that a faculty member contributes that are a measure for reward but it is also good teaching, course development, involvement in the practice school operation, participation in relevant research and contribution to educational administration that are taken into consideration in recognising merit.

Conclusion

The intense involvement of both students and staff in planning and operation of various innovations at BITS has generated a pattern of behaviour. It is a behaviour born from the discipline of involvement and participation. Code of conduct, be it for teachers

or students, cannot be imposed from outside. It is repugnant and self-defeating. At BITS when students and staff are given the opportunity to be involved in the management of the educational system they have realised a self discipline through work. It is a difficult process because attitudes have to change and old habits have to be discarded. BITS is convinced that the experience of students and staff in management participation will stand BITS in good stead and give it strength to face new challenges like efforts at Collaborative Education with industry and linkages for National Development and developing an active centre for educational research and institutional development.

Role of Higher Education in the Process of Development and Change

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7. School Health Programmes.
8. Family Welfare (Planned parenthood).
9. Control of Communicable Diseases.
10. General suggestion for the upkeep of health and sanitation.

A three day camp on Nutrition, Food and Child care was also conducted on 1, 2 and 3rd March by the department with the collaboration of the Mobile Food and Nutrition unit of the Central Government in Padmanabham Village. The following items were discussed and some demonstrations were also conducted in regard to use of materials for better nutrition.

(a) Nutrition for vulnerable groups followed by demonstration of food for vulnerable groups.

(b) Food borne and water contamination followed by demonstration of weaning foods.

(c) Demonstration of groundnut preparations and ragi products.

Though the camp, was intended for women, 20 community health workers, 10 trained dias and 6 adult literacy teachers also participated.

We are already having a follow up of the first camp when the instructors reported some desirable changes like village sanitation drive undertaken by the adult education group in the village, Podugupalem. In another village the adult education instructor and the participants went round and informed about the spread of communicable diseases through open drains and garbage pits and educated the villagers to have compost pits and soakage pits. This was the result of the camp and we want to follow this type of programme through a series of training camps in villages where knowledge, theory, practice and specific action are integrated. This is a new experiment which we are conducting in the field and which we hope to continue in the next few months. This can be one strategy of non formal education where adult education groups will be involved to solve specific problems and issues concerning their villages. Specific action proposals can be carried to the advantage of the villagers for their development and better awareness through mutual consultation and dialogue. □

PM addresses the convocation of NEHU

Prime Minister Shri Morarji Desai delivered the second convocation address at the North-Eastern Hill University, Shillong, recently. He emphasised the importance of education to harness faith, character and self-reliance in the youth. The youth should build confidence on the basis of the country's cultural heritage to bring prosperity in the country. Shri Desai who is also the Chancellor of the university said government had taken steps to re-orient the educational system and frame a new policy in consultation with the educationists of the country. Education had been the chief instrument of enabling a person to know his capacity, limitations and also to provide him with the capacity to overcome these limitations. We had a great tradition in our country when education was imparted free of cost and also

the country to meet the requirements of Meghalaya, Mizoram and Nagaland. Dr. Dhan said the university was also giving equal importance to the programmes of non-formal education to achieve the objective of development of human resources.

Gurukul Mahavidyalaya convocation

Delivering the convocation address at the Gurukul Mahavidyalaya in Hardwar, Shri Banarasi Das, Uttar Pradesh Chief Minister urged the young graduates to translate the knowledge acquired by them during their student career into action. The Chief Minister said that their main task was to serve the society and make it happy and prosperous. This was a continuous process and the students should therefore keep on enriching their knowledge. He said that they could succeed if they became fearless, dedicated and devoted to their pursuits and ideals. The

to increase productivity. If we could become self-sufficient in foodgrain production, the peasant would sell his surplus production in export market to fetch valuable foreign exchange for the country. Shri Charan Singh referred to the stagnated growth rate, increasing unemployment and widening disparity of income between the urban and rural sectors. The Deputy Prime Minister called for a change in attitude of younger generation and asked them to be more practical in their approach towards problems facing the country. The degrees of Doctorate of Sciences were conferred on Shri Charan Singh and Dr. A.N. Khosla, former Governor of Orissa and renowned scientist.

IIT Kanpur convocation

In his convocation address delivered recently at the Indian Institute of Technology, Kanpur, Dr. Triguna Sen, former Union Education Minister said that these days too much emphasis was being laid to make the education system vocation-oriented.

He said education was of two kinds: one which served the time while the other was more durable and priceless. Most of the educational institutions in the country from primary to university level were imparting education of the first kind and missing the essence of true education which was aimed at preparing good human beings. Dr. Sen observed that linking education to jobs and vocations and treating students as mere apprentices might be beneficial temporarily but was inimical to the healthy growth of society. The country had many technocrats and professionals but very few people were available who could inspire others through their selfless service and vision. Dr. Sen called on the younger generation to undo the damage done to the system in the past.

Shri L.M. Thapar, Chairman of the Board of Governors of the Institute said the Institute was fully geared to face the challenges of change and progress.

Dr. A. Bhattacharya, Director of the Institute said in his address that the Institute had gained standard of excellence during the recent years.

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free from any control. The Prime Minister stressed the need for acquiring knowledge about Dharma which enabled us to be happy while making others happy. Education ought to have enabled us to love our own country and to have confidence. It was very important to realise the role that education had played in shaping the present and future of the country. Shri Desai said the education system had to be reoriented based on the wisdom of the past and realities of the present.

Dr. A.K. Dhan, Vice-Chancellor of the university said in his address that apart from the usual functions, the university was committed to pay special attention to the improvement of socio-economic conditions and welfare of the people of hill areas, particularly, their intellectual, academic and cultural advancement. The university had created an all-India faculty drawn from every state of

country was passing through a transitory period where old values were being questioned and new values had yet to replace them. The Chief Minister advised the students that the traditions and values which were of permanent nature and had stood the test of time should be consolidated.

The university conferred the degree of Neet Vachaspati on Shri Banarsi Das.

OUAT convocation

Shri Charan Singh, Deputy Prime Minister delivered the convocation address at the Orissa University of Agriculture and Technology in Bhubaneswar recently. He emphasised the need for bigger land holdings to raise agricultural production and to provide better standard of living to the rural masses in the country. He asked the rural people to take up non-agricultural vocations to ease the pressure on land and

Patna Varsity development programmes

Dr. T.B. Mukherjee, Vice-Chancellor of Patna University said recently in Patna that the university had taken several steps to improve the academic programmes and the welfare of its students and faculty members. Preliminary steps have been taken to utilise the available grants for construction of new buildings, hostels and for purchase of books and journals. An independent radiology section in the university dispensary would be started soon for the benefit of teachers and the employees. A well furnished dental unit will be commissioned for service in May. Dr. Mukherjee said that the tuberculosis survey conducted by the university on the student community was in progress. Of the three thousand

the UGC and the state government had been approached for sanctioning adequate funds for construction of residences for the teachers and other staff.

AMU organises symposium on interdisciplinary research

Speaking at the opening session of the two-day symposium on inter-disciplinary research, teaching and university administration organised by the Aligarh Muslim University Welfare Organisation in Aligarh recently, Dr. A.M. Khusro, Vice-Chancellor of the university pleaded for inter-action of different faculty members to promote inter-disciplinary research in universities. He suggested formation of a review committee

PAU research on solar energy

The Punjab Agricultural University at Ludhiana is engaged in developing an engine and perfecting a collection system to use solar energy to run irrigation pumps and other farm equipment. Solar energy concentrators designed and developed at the university are being used to concentrate solar energy in such a way that high pressure vapours are produced. The vapours are condensed and fed back to the unit for reheating. The engine has performed well in the trials and is designed for minimum power loss and vapour leakage. The university scientists are also working on a number of other projects in the field of solar energy. As Punjab has bright sun for the better part of the year, conditions are felt ideal for the exploitation of solar energy. The cost of farming may be reduced when the means for store and utilisation of solar energy are perfected. The Solar Energy Department of the university developed a solar water heater in 1971. Solar air heaters of various designs have been developed and tested at the university. The development of air heaters has helped in the designing of agricultural products drying devices. The Department has also attempted to develop various types of concentrators to collect solar energy at medium and high temperatures.

AU plans Telugu courses

Presiding over the contact programme at Visakhapatnam of the students taking postgraduate correspondence courses, Shri M.R. Apparow, Vice-Chancellor of Andhra University said that the courses would revolutionise higher education. He said that the programme had been arranged with a view to bring students and the faculty in close contact. The university has sought permission of the Union and the State Government for starting a certificate course in Telugu for Indians residing abroad who were interested in taking the course.

Dr. K.V. Sivayya, Director of the correspondence courses said

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persons scanned, about one hundred cases of TB, were receiving treatment under the scheme. This was a unique research project carried out by the university with the help of the University Grants Commission.

The proposal for opening a reprographic section in the university library had been prepared and sent to the University Grants Commission for release of financial assistance. The proposal for starting teaching in library science had been submitted to the state government. Dr. Mukherjee said that the UGC had committed a grant of Rs. 1.20 lakhs for imparting adult education in the university. Centres had started functioning in Science College, Magadh Mahila College and in some other colleges under the auspices of the National Service Scheme. The Vice-Chancellor said

which could pin-point shortcomings and suggest ways and means to replenish the existing system. Dr. Khusro said that AMU was a shining example of secularism in the country. The rate of increase in the number of applicants for admission to the university courses had posed a challenge to the administration.

Prof. Q.H. Farooquee, Head of the Department of Commerce in his presidential address emphasised the social responsibility of researchers. He said that theses being the scientific documents should have inter-disciplinary approach to enhance their utility.

Prof. Nawab Hasan Khan, convener of the symposium said that the papers read at the symposium would be preserved as a permanent record for future guidance,

that the University Grants Commission had agreed to finance the correspondence courses for the initial four years. He felt that it was a matter of pride that the university had been selected for running these courses.

About six hundred students participated in the contact programme which was held for a week.

Role of teachers

Inaugurating the annual conference of the Federation of University Teachers' Associations of Bihar at Bhagalpur recently, Dr. Satish Chandra, Chairman of the University Grants Commission called upon the teachers to take due share of social responsibilities in view of their position as intellectual leaders of the society. He said the nation was trying to evolve an integrated national policy on education right from primary to the university stage. The university teachers should take interest in what was happening in the educational institutions around them in the larger interest of the community. Prof. Satish Chandra asked the teachers to work for the success of adult literacy programmes and the various schemes of non-formal education.

- Shri Thakur Prasad Singh, State Minister for Higher Education, pleaded for the revival of faith in ancient spiritual values.

Dr. G.P. Sinha in his presidential address detailed the present crisis in colleges and universities as reflected in different manifestations of unrest at the campuses. Dr. Sinha said the unrest was basically due to the socio-economic factors and the decline in social values that had taken place at all levels of society. The solution could be brought about by coordinated efforts by all concerned.

A seminar on higher education and the role of teachers was organised on the occasion.

Progress at Magadh Varsity

The Magadh University senate at its recent meeting approved a surplus budget of the university for the next financial year. The

estimates showed an anticipated receipts of Rs. 825.7 lakhs and an expenditure of Rs. 825.4 lakhs. Dr. Hargobind Singh, Vice-Chancellor of the university said at the meeting that the post-graduate teaching in labour and social welfare, jainology and statistics would be introduced soon. A clock tower would be constructed in the university library for the benefit of students and teachers. The Vice-Chancellor said that examinations in honours subjects would be arranged at fewer centres as an attempt to restore sanctity to the examination system. Coaching facilities in hockey and football would be provided to the university students from the next session. The senate authorised the Vice-Chancellor to constitute a committee of the Members to prepare the guidelines for establishment of new colleges.

ISM locates additional graphite deposits

A group of teachers and post-graduate students of Indian School of Mines, Dhanbad, have located additional graphite deposits as a result of their field investigation in Balangir and Sambalpur districts of Orissa. On the basis of results obtained by the students, a test location was released near Dahita village where a graphite vein of about one-foot thickness at a depth of seventeen feet was struck at the site. A de-

tailed survey of the area near Berni resulted in three more test locations. All these test locations have been proved to be discovery locations.

The team of the School had struck graphite in Bender and Behermunda during their field investigation last year.

IARI research on high yielding varieties

Dr. H.K. Jain, Director of the Indian Agricultural Research Institute said recently in New Delhi that the new varieties of high yielding wheat released for current sowing were likely to result in a significant increase in productivity and production of wheat. The Institute has developed the seeds keeping in view the characteristics of soil, irrigation and typical agro-climatic conditions prevailing in different regions of the country. Dr. Jain said that wheat production was expected to reach a record level of 34 million tonnes this year with the sowing of these varieties. He hoped that it would be possible to control the pest epidemics with the new varieties as these had a diverse genetic base. The Institute had located hot spots of these diseases so that the epidemic was contained at the source. The use of these anti-rust varieties in the South will be a break-through in the efforts to eradicate rust diseases.

ASSOCIATION OF INDIAN UNIVERSITIES

Din Dayal Upadhyaya Marg, New Delhi-110002

Applications are invited from University/College Teachers for a **BASIC LEVEL CORRESPONDENCE COURSE IN EVALUATION METHODOLOGY AND EXAMINATIONS**. The duration of the course will be six months beginning 1st July, 1979. The course is proposed to be organised from four Regional Centres (Mysore, Surat, Shillong and Delhi) and will be conducted and coordinated by the Research Cell, AIU. A personal 'contact programme' at the centres is also planned.

Requests for prospectus and prescribed application forms, accompanied by a crossed Indian Postal Order for Rs. 5/- drawn in favour of 'The Secretary, Association of Indian Universities' together with a self addressed stamped envelope (40 paise) should reach the undersigned by **May 19, 1979**. The last date for receipt of applications in the prescribed form is **June 1, 1979**.

V. Natarajan
Project Officer (Examinations)

system. Guidelines were formulated by the Commission to use the enthusiasm of students for constructive purposes in programmes of rural development, community service, adult education with special emphasis on adult literacy and extension services.

Technology for growth

Dr. P.C. Chunder, Union Minister of Education inaugurated recently in Calcutta an exhibition on new technology for growth sponsored by the West Bengal Research and Development Committee. The Union Minister said that the government was not opposed to scientific and technological development in the country. The government had sanctioned a huge allocation in the plan for development of science and technology. Although active steps were being taken for development of the national laboratories it was felt that smaller laboratories had also an important role to play in bringing science and technology to the people. Technology could improve the life of the people and the government was making its efforts to encourage scientific developments in the country. Material progress has always depended on technological progress which could also be utilised to solve major economic problems. It was for the nation to combine scientific and managerial skills to reach the people. Dr. Chunder called for a comprehensive and composite efforts in this direction.

Gauhati Varsity community development programmes

The inaugural function of the UGC sponsored extension project of the Department of Anthropology of Gauhati University was held recently at Hahim in Kamrup district. The objective of the project was to assess the impact of community development programme on Hahim gram sevak circle which was inhabited by the tribal population of Rabhas, Kacharis and the Garos.

Shri Zehirul Islam, State Minister of Community Development, expressed his satisfaction in taking

up such a study by an academic body to assess the impact of community development programmes. He highlighted the importance of the study which will cover the tribal population. Anthropologists could play a significant role in making the community development programmes a success. The Minister assured of the co-operation of his department in the implementation of the project taken up by the university.

Shri Asraf Ali, Chief Guest and Director of Public Administration of Assam highlighted the problems of the tribal population of the region. He appreciated the idea of bringing anthropology, a science subject of the university, within the easy reach of common man.

Prof. B.M. Das, Head of the Department of Anthropology of the university presided over the function.

National panel for solar energy suggested

In his keynote address at the workshop on solar energy organised recently at the Panjab University, Mr. C.J. Swet, Adviser to the US Solar Energy Research Institute said that to formulate an effective programme for development of solar energy storage techniques the subject should be viewed from various angles. The subject should be divided into solar application, energy sources, storage modes, technologies and strategies.

Dr. R.L. Datta, President of the International Solar Energy Society emphasised the need for national commissions of solar energy in various parts of the world. Solar energy uses must be related to the basic needs of life.

Prof. R.C. Paul, Vice-Chancellor of the University said since most of the developing countries were near the tropics where solar energy was abundant, these countries could take to solar energy.

An exhibition on different ways of storing energy and its application was arranged on the occasion.

Plan for Varsity at Mangalore

Dr. V.K.R.V. Rao, former Union Minister and Chairman of the committee constituted by the Mysore University to examine the various issues pertaining to the establishment of a new university at Mangalore has submitted its report recently to the State Chief Minister, Shri Devaraj Urs. The committee has suggested establishment of university centres at two campuses—one at Konaje, 15 kms. from Mangalore where a postgraduate centre of the Mysore University is already functioning and the other at the city campus, at Mangalore. Dr. Rao said a provision of Rupees twenty-five lakhs for the Mangalore University had been made in the state budget. The committee has suggested a non-recurring provision of Rupees 1.65 crores and recurring expenditure of Rupees 88.5 lakhs for establishment of the university. It has been recommended that in order to involve the community, the university should start a centre for community services to provide for rural and cooperative programmes including adult literacy, slum development and adoption of villages for their all-round development. Suggestions for improvement of facilities for study of Yakshagana, Bhoota cult of South Kanara, Tulu, Konkani and Dodava languages have been made in the report. The proposed university would start evening classes for the benefit of employed students. The demand for business administration courses would be met by introducing degree courses.

HAU adopts seven hundred families

Dr. P.S. Lamba, Vice-Chancellor of Haryana Agricultural University, said recently in Hissar that all the university programmes will be taken to the farmers through the krishi gyan kendras and regional research stations of the university. The university has adopted seven hundred families of marginal and landless farmers for their economic and social welfare. The Vice-Chancellor

said the university will spend Rs. 335.96 lakhs on research programmes during the current session. The research schemes to be taken up include aided projects at Bawal and Hissar. Special attention will be paid by the university to research schemes in dry farming. The training programmes conducted by the university have also become popular with the farmers of other states. About five hundred farmers from Bihar, Himachal Pradesh, Jammu & Kashmir and Rajasthan visited the university recently to familiarise themselves with the progress of the various programmes carried out by the university.

HAU introduces course on library use

Haryana Agricultural University will introduce for the post graduate students a short-term course from the next trimester on the use of research and reference tools of the library. This will be a one credit hour course like a seminar course and will have to be cleared at the masters level. Those students who have done their masters degree elsewhere will have to clear this course while doing their Ph.D. at the university. Dr. R.N. Pal, Dean, Postgraduate Studies of the university said in Hissar that the course will have three parts besides lectures for part A and part B. Dr. Pal said that the introduction of this course will help the senior students in making the full use of the library in a systematic way and facilitate the work of research.

JNTU introduces four-year B.Tech course

The Executive Council of the Jawaharlal Nehru Technological University, Hyderabad at its recent meeting held under the Chairmanship of Vice-Chancellor, Dr. N. Shanmukha Rao approved the conversion of five-year B. Tech. engineering course to a four-year degree course from the next academic session. Two seats each in civil, mechanical, electronics and communications and three seats in architecture will now be reserved in the second year degree course for direct admission of the diploma holders.

A research fund was instituted at the university to motivate faculty members to take up research programmes. Research grant would also be made available to colleges on request after approval by the research committee.

Conference of academic librarians

Professor M.V. Mathur, Director of the National Staff College for Educational Planners and Administrators inaugurated the first national conference of the Indian Association of Academic Librarians at the Jawaharlal Nehru University, New Delhi recently. Prof. Mathur said he visualised the librarian as a non-formal teacher who along with the subject specialists should take stock of at least basic books in libraries. Librarian had a special role to play in the changing educational pattern in the country. He pointed out that most of the libraries were not equipped to deal with the plus 3 stage although the system had been in vogue for some time. Now that the regional languages have been recommended as the medium of education, it was necessary to stock books to meet these requirements. There was no scarcity of funds if these were utilised properly. He said that librarian should inculcate a reading habit in students and book clubs. Exhibitions should be organised with this objective. Proper library facilities for the poor students who cannot buy expensive books should be provided. Prof. Mathur suggested creation of a special fund for duplication of reading material for these students.

Prof. Sarup Singh MP, and former Vice-Chancellor of the Delhi University said in his presidential address that libraries should be fully equipped to cater to the changing needs of the readers. The academic librarian should be able to guide the reader about procurement of the material which was not available in his library. A good librarian should love books and make others love them.

Earlier Shri K.R. Narayanan, Vice-Chancellor of the university

welcomed the delegates and said that book being a mighty supplement to life, the librarian should promote the reading habit in the community.

Academic programmes at Agra University

The Agra University has formulated a plan of action to conduct the examinations from May 15 to June 30 to ensure the opening of next session from July. The university has announced that post-graduate examinations will not be conducted on June 11-13 to enable the students to appear at the IAS examination. The State government has been approached for considering the suggestion that teachers of the affiliated colleges be granted compensatory leave or encashment of their leave in lieu of their work during the summer vacation. Central evaluation system will be introduced on the campus for all the faculties. The university has been able to dispose of the old cases of migration certificates and despatch diploma certificates to the students. A new formula for re-evaluation of examination papers of the students has been evolved. Dr. S.N. Mehrotra, Vice-Chancellor of the university said recently in Agra that he would submit a detailed report to the State government for improving the academic standards at the university.

Personal

1. Dr. S.N. Mehrotra has taken over as Vice-Chancellor of Agra University with effect from 14th April 1979.
2. Prof. P.V. Indiresan has taken over as Director of Indian Institute of Technology, Madras with effect from 16th April 1979.
3. Prof. L. P. Agarwal, Director of the All India Institute of Medical Sciences has been selected by the Committee of French League and the International Organisation against Trachoma for the 1979 gold medal award.

Allocations for higher education

Laying the foundation stone of new building for the History Department of the M.S. University of Baroda recently, Prof. Satish Chandra, Chairman of the University Grants Commission said that Planning Commission had proposed a drastic cut in the allocation of funds for higher education in the sixth plan. The Planning Commission had allocated rupees one hundred twenty six crores only against the earlier provision of rupees two hundred ten crores in the fifth plan. Prof. Satish Chandra said that he had approached the Planning Commission to reconsider the proposals in the interest of proper development in the field of higher education. The University Grants Commission had undertaken measures to raise the standard of university education by starting fellowship programmes for teachers and about two thousand research projects, which would make an impact in a couple of years. About one thousand university teachers were doing their research under the teacher fellowship programme of the Commission. Most of the universities in the country have been allotted a research grant to promote their research studies. Seventy-one universities are receiving development grants from the Commission. The Commission had spent about rupees twenty crores towards development of the research programmes during the fifth Plan period. About eighty-six universities had introduced regional languages as medium of instruction at different levels. Prof. Satish Chandra said the educational experts had submitted their recommendations to the Prime Minister for introduction of a new pattern of education to make it more purposeful and meaningful.

Varsity at Gulbarga proposed

Shri S.S. Wodeyar, Vice-Chancellor of Karnataka University said recently in Dharwar that the postgraduate centre at Gulbarga

was expected to be upgraded to a university from the next academic year. He said the state government had made a provision of rupees fifty lakhs in its budget for development of the postgraduate centre which would also be helpful in accelerating the pace of preliminary work for establishment of an independent university. The Vice-Chancellor appreciated the work done by the committee set up under the chairmanship of Dr. A.S. Adke, former Vice-Chancellor of the university to study the case for establishment of a university in Gulbarga. The committee has submitted its interim report to the state government.

Orientation of courses in agricultural marketing

The Punjab Agricultural University has been selected by the Food and Agricultural Organisation as the lead agency for improving the teaching of agricultural marketing at various levels. Dr. D.S. Sidhu, Head of the Department of Economics and Sociology at the university said recently in Ludhiana that the new programme envisaged orientation of the courses in agricultural marketing for general improvement in the conduct and performance of agricultural input and output markets and marketing efficiency.

Convocation sans Degrees-Diplomas

(Continued from page 237)

year for *Dharma Yatra* in the rural areas. Those who join the *Dharma Yatra* have to make their own arrangements for food, shelter and travel. No roll of membership is maintained. Still on its roll are devoted *swadhyais* who include eminent jurists, lawyers, professors, learned people. An internationally famous company law practitioner plans his *Dharma Yatra* to Kutch straight from the airport after return from an international trip.

The *sutra* is you do all you feel like doing for God's sake. You oblige nobody by doing anything for Him. You are performing your own *Dharma*. You should also not permit your left hand to know what your right does or gives. The account of the institution is maintained to a pie with great care and scruple. Voucher for every donation is issued. Still no public appeal is issued for funds, no publicity is given to donors or donations. If the donation is above one hundred, the donation is immediately not accepted. Two-three times it is avoided and the donor is required to approach two-three times to make sure that the donation is genuinely inspired by God and that He desires that the donation be accepted. The solid-rock-like foundation of faith in God and the goodness of mankind is what prompts the *swadhyais* to bear the torch of human welfare and be a *Nimit Matra* (निमित्त मात्र).

Shastriji has 16 such institutions spread all over the country, each working silently in its own way, seeking nothing from anybody and raising no expectations. What God wills be done.

The institution has a programme of *Van Dikha* (वन दीक्षा), planting trees in Rajkot on 26th and 27th of April 1979. *Swadhyais* and farmers will plant trees. They will look after them each one as desired. And a whole *Upvan* (उपवन) will be raised. No *Van Mahotsava*, only *Van Dikha* (वन दीक्षा) to plant and raise trees.

This process of self-study, self-help, devotion to duty and service in the name of God is an ideal example of what the nation needs in terms of educational renaissance. □

A list of Doctoral Theses Accepted by Indian Universities

SOCIAL SCIENCES

Psychology

1. Saxena, Vinod Bihari Lal. A study of the motivational pattern of restive students leaders. Kanpur University.
2. Shashi Lata. Prediction of academic achievement. Meerut University.

Sociology

1. Bidarakoppa, G. S. Role of religious institutions in the promotion of social welfare in Dharwar District, Karnataka. Karnatak University.
2. Katakia, Manjula J. Kapole caste in Greater Bombay: A sociological analysis. S.N.D.T. Women's University.
3. Krishna Kumari, K. International migration: Its dependence upon heterogeneity of population composition. University of Kerala.
4. Nirmal Singh. Private control of higher education: A study in ideology, its conditions and sociological consequences. Jawaharlal Nehru University.
5. Mishra, Laxmi Shankar. The study of the social system of small scale industries at Kanpur. Kanpur University.
6. Sinha, P. S. N. Urban youth and modernization. Magadh University.
7. Thankamony, K. B. Professional orientation of management: A sociological study of managers of public and private enterprises in Kerala. University of Kerala.

Political Science

1. Agarwal, Pushapalata. Amendments to Indian constitution from 1950 to 1967 with special reference to their legal and political implications. Kanpur University.
2. Chopra, Ashwani Kumar. India's policy on disarmament. University of Delhi.
3. Parihar, Ram Kumar Singh. Uttar-Pradesh ke Fatehpur Janpad mein sthaniya swayat shasan sansthaon ka swarup evam kriyanvayan, 1947 se 1974 tak. Kanpur University.

Economics

1. Agarwal, Ashok Kumar. A study of commodity taxation in Uttar Pradesh. Kanpur University.
2. Govinda Rao, M. Determinants of tax revenue and non plan revenue expenditures of the states in Indian Federation: A time series analysis with special reference to Kerala, Mysore, Orissa and West Bengal. Sambalpur University.
3. Mahapatro, Sinhadri Bihari. Industrial wage structure in Orissa. Berhampur University.
4. Makhan Lal. Location of footloose industries: A case study of the Punjab and Haryana. Jawaharlal Nehru University.
5. Munidoraswamy Naidu, K. Food production, credit and co-operatives in I.A.D.P. districts with special reference to West Godavari District of Andhra Pradesh. Sri Venkateswara University.
6. Murali Mohan Rao, Ravi. Inter state variations in the performance of the primary agricultural credit societies. 1960-61 and 1970-71: A study in measurement. Andhra University.
7. Murty, B. S. Trade Union in Orissa State: A study of its growth, organisation, structure politics and leadership. Berhampur University.
8. Narasimha Reddy, D. Trade Union movement in Indian Railways. Sri Venkateswara University.

9. Seshadri, I. J. H. Portfolio behaviour of Indian scheduled commercial banks, 1950-75. Indian Institute of Technology, Kanpur.

10. Sivakumar, S. S. Theory of peasant economy: A study in neo-populism. University of Delhi.

Law

1. Raghbir Singh. Wage disputes in private and public sector enterprises in India: A comparative legal study of issues and alternatives involved. University of Udaipur.

Education

1. Bhatia, Tilak Raj. An experimental study of the effect of Reciprocal Inhibition Therapy on anxiety in adolescents. University of Delhi.
2. Gupta, Laxman Prakash. A study of personal characteristics and academic achievement of scheduled caste and backward class students of Meerut University. Meerut University.
3. Gupta, Meenakshi. An information integration analysis of developmental trends in attribution of scholastic performance. Indian Institute of Technology, Kanpur.
4. Mohammed Siddiqui Rahman. Development of population education curriculum in a system of non-formal education for out-of school youth. University of Delhi.
5. Narsian, Sushila Dharamdas. Innovations in higher education in India. M. S. University of Baroda.
6. Sahab Singh. Relationship between teacher's personality, teaching success and behavioural changes in students. University of Udaipur.
7. Sharma, Ganga Ram. A study of factors underlying adjustment problems of professional and non-professional college students. Meerut University.

Commerce

1. Bhattacharyya, Swapankumar. A survey of material accounting method towards a homogeneous process. University of Calcutta.
2. Mohandas, S. Kirupakara. Pricing in passenger transport services by road with special reference to Tamilnadu. University of Madras.

HUMANITIES

Philosophy

1. Ruddy, Guillelmus. Comparative poetics as a purely formal science with special application to Advaita Vedanta and the phenomenology of Husserl. University of Madras.

Fine Arts

1. Choyal, Shail Kumar. Nathdwara—An art centre: A study of Nathdwara School of Painting from 19th century to mid 20th century. Meerut University.
2. Mohan Rao, G. A critical study of nomenclature and notation in Indian Music with special reference to Karnataka music. University of Delhi.
3. Syal, Prakash. Radio play and stage play acting: A comparative study. Punjabi University.
4. Veena. Muzaffarnagar kshetra ke lok kala rup. Meerut University.

Linguistics

1. Priyram Chander. A critical study of Tarka Bhasha by Keshav Misra. Punjabi University.

Literature

English

1. Dwivedi, Anirudh Prasad. The social philosophy of Jhon Dos Passos. Kanpur University.
2. Manapure, Sudhakar Krishnarao. Humanism in the Indo-English novel, 1925-55. Nagpur University.
3. Misra, Jagdish Shankar. Thematic patterns in the novels of Graham Greene. University of Saugar.
4. Tikoo, Swaraj, Kishen. The 'mystery' element in the plays of T.S. Eliot. University of Delhi.

Sanskrit

1. Awasathi, Sudha Rani. Bhas tatha Kalidas ke natya shilp ka tulnatmak adhyayan. Kanpur University.
2. Bimla Rani. Pramukh Shaiv Sattri kavyon ka sahityik adhyayan. Meerut University.
3. Biswas, Kalpana. A critical study of the Dasabhumi-kasutra, University of Delhi.

Punjabi

1. Puar, Joginder Singh. A grammatical study of time and tense in Punjabi. Punjabi University.
2. Satinder. The semiological patterns in the legend of Mirza Sahiban. Punjabi University.

Hindi

1. Asha Rani. Hindi Ramkavya parampara mein Lakshman ka swarup. Meerut University.
2. Bhardwaj, Laxmi Narain. Hindi Marathi natak evam rangmanch ka tulnatmak adhyayan. D.Litt. Meerut University.
3. Chander Prabha. Ghananand ke kavya mein ukti-vaichitrya. University of Delhi.
4. Chaturvedi, Ramala. Jainender ke katha sahitya mein antardwndav. Kanpur University.
5. Chauhan, Dilip Kumar. Bharat ke adhunik rajbhasha: Swarup aur samasyayen. University of Indore.
6. Chawla, Sushma. Vishnudas: Vyaktitv evam kritiv. Meerut University.
7. Chopra, Veena. Beesawin shatabdi ke aitihasik natakan mein yug-bodh. University of Delhi.
8. Ekka, Clement. Janavadi Hindi rang-manch ke parampara. University of Delhi.
9. Jasbir Singh. Gurugranth Sahib mein yugchetna, University of Delhi.
10. Kaushik, Dev Dutt. Bharatiya kavyashastra mein vyavharik sameeksha aur uske samajik prasangikata. Jawaharlal Nehru University.
11. Lahiri, Pushpa. Adhunik Hindi natakan ke sandarbh mein Mohan Rakesh ke natya kritiyon ka anusheelan. Kanpur University.
12. Kuldip Kaur. Swatantryottar Hindi natakan mein yatharathta bodh. University of Delhi.
13. Paliwal, Rita Rani. Rangamanch aur Jaishankar Prashad ke natak. University of Delhi.
14. Pandey, Harisewak. Sant sahitya mein vaishnav tatwa. Avadh University.
15. Pathak, Ram Dulare Lal. Natyakala ke drishti se Jaishankar Prashad aur Harikrishan Premi ke natakan ka adhyayan. Kanpur University.
16. Prem Lata. Hindi upanyas mein nari ke vividh rup, 1936-1950. University of Delhi.
17. Rahine, Chandrakala. Astitvavad aur Hindi upanyas. University of Indore.
18. Saroj Bala Devi. Assam ke bhakt kavi Shankardev evam Surdas ke kavya ka tulnatmak adhyayan. Meerut University.
19. Saxena, Sadhana. Kabir ke vishisht shabdawali ka darshanik evam sampradayik adhyayan. Kanpur University.
20. Sharma, Ramesh Chandra. Unnisvi shatabdi ke natya sahitya mein parampara aur prayog. University of Delhi.
21. Singh, Jawaharlal. Chhayavad kavya ke adhyatmik chetna. Awadhesh Pratap Singh University.

22. Singh, Lallan Ji. Ramayan Kaleen yudh kala (Hindi). Avadh University.

23. Tiwari, Leela. Bundelkhand ke pramukh ritikaleen kaviyon ka anusheelan. University of Saugar.

24. Tripathi, Ramshankar. Patravartan ke avadharna. Avadh University.

25. Upadhyay, Ramasrey. Nai kavita: Ek mulyankan. Avadh University.

26. Upadhyaya, Jagdish Sahai. Kamrup mahakavya ka anusheelan. Kanpur University.

27. Ved Prakash. Ghananand aur Prashad ke kavyon mein soundarya evam prem. Meerut University.

28. Vohra, Shashi. Satthottri Hindi katha-sahitya ke bhasha ka sanrachnatmak evam shaili tatwik adhyayan. University of Delhi.

Bengali

1. Mukhopadhyay, Anima. Saptadas Satabde rarh deser samaj o sahitya samiksa: Puratan puthir sutre alochana. Visva-Bharati.

Oriya

1. Mohaptra, Kulamani. Madhya yugiya Oriya riti kavyare srungari chetna. Utkal University.

Tamil

1. Saraswathy, V. Saadhi Qdippadai thalattu oppari padalgalil sila otrumai Vetrumaigal. Madurai Kamaraj University.

Kannada

1. Venkatesa Acharya, K. Mahabharata and variations: Perundeyanar Pampa and Nannayya. Karnatak University.

Geography

1. Jain, Jawahar Lal. Growth and distribution of towns in the Malwa Plateau, M.P. University of Saugar.

2. Pandoy, N. P. Transport geography of western Madhya Pradesh. Bhopal University.

3. Tiwari, Vijay Kumar. Population of the Betul-Chhindwara plateau: A geographical analysis. University of Saugar.

History

1. Bhagwat Swarup. The Viceroyalty of Lord Linlithgow, 1936-1943. Meerut University.

2. Bhojani, Hira. United States policy in Laos, 1954-1963. Jawaharlal Nehru University.

3. Daniel, D. Struggle for responsible govt. in Travancore, 1938-1947. Madurai Kamaraj University.

4. Dar, Mohamad Hamza. Promotion of learning in Kashmir: The Sultan period. University of Kashmir.

5. Mishra, Prabodh Kumar. Orissa, 1930-1936: A study in political developments. Sambalpur University.

6. Sarveswaran, P. History of Arcot under Nayayets and Wallajah Nawabs, 1100-1801. Madurai Kamaraj University.

7. Vakkani, Nihalchand Anannji. Adhunik Vidarbha ka aitihas, 1885-1947. Nagpur University.

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Sports Talent Scholarships

Sports Talent Scholarship applications for 1979-80 from university students and national level scholarship holders (awarded by NSNIS, Patiala) who intend joining universities next year are invited on prescribed forms available from the Association office and University Sports Offices. Applications complete in all respect should reach the Sports Board of the Association of Indian Universities, D.D. Upadhy Marg, New Delhi-110002 not later than 30th May, 1979.

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Candidates with First Class Master's Degree in Chemistry/Physics or M.Tech. in Chemical/Mechanical Engg. with requisite experience in appropriate fields are also eligible.

S.S.O. Gr. I/Gr. II (Scanning Electron Microscope Laboratory) (Central Facility)

First Class B.E. Degree in Elect. Engg. or M.Sc. in Physics with a minimum of 5 years' experience in operating & maintaining Scanning and/or Transmission Electron Microscope facility including samples preparation. Persons with lesser experience (Minimum 2

years) may be considered for appointment at the SSO-II level.

3. DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES

Post: Assistant Professor/Lecturer

Field of Specialisation: Modern Economic Analysis (Micro Economics/Macro-Economics) Engineering Economics/Managerial Economics

4. DEPARTMENT OF APPLIED MECHANICS

Post: Professor, Assistant Professor/Lecturer

Field of Specialisation

Professor:- Experimental/Numerical methods in stress analysis, Elasticity, Plasticity, Dynamic Plasticity, Large Deformation, Dynamic stability, Plates and shells, Micropolar continua, Shear wall, Structures, Composite materials, Fracture Mechanics.

Assistant Professor/Lecturer:- Solid Mechanics, Fluid Mechanics, Material Science & Design Engineering.

5. DEPARTMENT OF CHEMISTRY

Post: Lecturer

Field of Specialisation:- Bio, Inorganic, Polymer and Physical Chemistry.

6. DEPARTMENT OF PHYSICS

Post: Professor, Lecturer. S.S.O. Gr. I

Field of Specialisation

Professor, Lecturer: Applied Optics/Solid State Physics/Plasma Physics.

S.S.O. Gr. I (Laser Applications Programme):- Ph.D. in Physics or Electrical Engineering, Minimum 6 years' research experience including 2 years of post-doctoral experience. Some experience in Applied Optics/Optical communications.
Desirable

Specialization in Physics, Fabrication and testing of optical waveguides.

7. DEPARTMENT OF CIVIL ENGINEERING

Post: Assistant Professor/Lecturer

Field of Specialisation:-(1) Water Resources Engineering (2) Transportation, Highways and Surveying (3) Soil Mechanics (4) Structures (5) Rock Mechanics/Soil Mechanics or Structures with special interest in rock mechanics.

Temporary positions also available in the Curriculum Development. Cell attached to the Department. For these positions persons with specialisation in any branch of Civil Engg. will be considered.

8. DEPARTMENT OF MECHANICAL ENGINEERING

Post: Assistant Professor/Lecturer, Sr. Res. Asstt.

Field of Specialisation

Assistant Professor/Lecturer: Turbo-machines, Power Plant Engineering, I.C. Engines, Refrigeration, Heat Transfer, N.C. Machine Tools, Metal Cutting, Metal Forming, Industrial Engineering, Instrumentation Control, Machine Design, Mechanism.

S.R.A.: (Ecology—Air Pollution Studies Project); Good Bachelor's Degree in Mechanical or Chemical Engg. with specialisation or interest in I.C. Engines/Fuel and Combustion/Automobile

Engg., or 1st Class Master's Degree in Chemistry or Physics.

9. INSTRUMENT DESIGN DEVELOPMENT CENTRE

Post: Professor/Chief Design Engineer, Asstt. Prof./Senior Design Engineer, Lecturer/Design Engineer.

Field of Specialisation

Professor/Chief Design Engineer:- (1) Industrial Production (2) Mechanical Engg. Design, Development and Production of Instruments.

Assistant Professor/Senior Design Engineer:- (1) & (2) as above and (3) Electrical/Electronic Design, Development and Production of Instruments (4) Industrial Design.

Lecturer/Design Engineer: (1) to (4) as above and (5) Optical Design, Development and Production of Instruments.

10. COMPUTER CENTRE

Post: Assistant Professor, Lecturer, System Programmer IIT Delhi has acquired a large ICL 2960 Computer System which is expected to be operational by the middle of the year.

Field of Specialisation

Asstt. Prof., Lecturer:- System simulation; compiling techniques; computer architectures; computer aided design; computability; theory of programming languages; operating systems; computer graphics; switching and automata theory; numerical analysis and operation research.

System Programmer:- Master's Degree in Engineering with at least 3 years experience or Master's Degree in Mathematics/Applied Sciences/Bachelor's Degree in Engg. with at least 5 years' experience specialisation in computer science/system programming either with work on a large system or as part of research work towards Doctorate Degree. Good knowledge of software engineering essential. Research and Development in current topics of computer science desirable.

Note

Those who had applied for this post against Advt. No. 9/78 need not apply again.

11. INDUSTRIAL TRIBOLOGY MACHINE DYNAMICS & MAINTENANCE ENGG. CENTRE

Post: Professor/Chief Design Engineer, Asstt. Prof./Senior Design Engineer, Lecturer/Design Engineer.

Field of Specialisation

Professor/Chief Design Engineer: (1) Friction & Wear Analysis (2) Oil Analysis & lubrication planning (3) Diagnostic Maintenance and maintenance engg. application in Power houses and process industries (4) Machine Health monitoring & signature analysis (5) Tribological system design and its application in industrial process (6) Terotechnology (7) Energy conservation (8) Design Audit & review.

Assistant Professor/Senior Design Engineer:- (1) Same specialisation as mentioned for Professor's post. In addition other areas are (2) Acoustic Response & Noise Control in Machines (3) Performance testing & evaluation of machine components (4) Elasto-hydro-

dynamic lubrication (5) Fault diagnosis in tribo-systems (6) Wear resistance surface costing and Ion Implantation (7) Plant Maintenance & system analysis (8) Ferrography analysis.

Lecturer/Design Engineer:- (1) Areas same as that for Asstt. Professor's/Sr. Design Engineer (2) Wear mechanism of polymers (3) Machine dynamics & vibration (4) Surface mechanics (5) Application of optical instruments and lasers in tribodynamics (6) Additive formulations (7) Application of computers in terotechnology.

12. CENTRE FOR BIOMEDICAL ENGINEERING

Post: Design Engineer: Degree in Electronics/Electrical Engineering. Experience in design of biomedical instrumentation & medical electronic devices preferred.

13. CENTRE FOR ENERGY STUDIES

Post: Professor/Chief Design Engineer, Asstt. Prof./Lecturer/Design Engineer.

Field of Specialisation

Professor/Chief Design Engineer

(1) **Electrical Energy Systems:** Planning, energy conservation, fault studies, transients, control, optimisation and HVDC transmission.

(2) **Solar Energy Utilisation:** Stirling and rankine engines, selective coatings, energy storage, solar concentrators, absorption refrigeration, solar cells and solar architecture.

Assistant Professor/Lecturer/Design Engineer: (2) as above and utilisation of synthetic fuels in I.C. Engines and laser induced fusion.

14. CENTRE FOR APPLIED RESEARCH IN ELECTRONICS

Post: Design Engineer: Good Bachelor's Degree in Electronics/Electrical Engg. with 2 years' experience in research/design development and production in Integrated circuits.

Field of Specialisation: Integrated Circuit Technology.

15. CENTRE FOR RURAL DEVELOPMENT & APPROPRIATE TECHNOLOGY

(a) **Post:** Assistant Professor/Lecturer/S.S.O. Gr. II

S.S.O. Gr. II: First Class Bachelor's Degree in any field of Engg., Science or Social Science with 2 years' research/industrial experience in any Institute of University standard/Establishment of repute.

Desirable

Asstt. Prof./Lecturer/SSO Gr. II The applicant should preferably have ability and commitment for rural development or development of appropriate technology.

(b) **Post:** Research Associate/Sr. Research Asstt./Sr. Tech. Asstt: The applicant will be required to work in the area or rural technology.

16. SCHOOL OF MATERIAL SCIENCE & TECHNOLOGY

Post: Professor, SSO Gr. II, Research Associate, Sr. Res. Asstt.

Field of Specialisation

Professor: Building materials such as cement concrete, bricks, composite materials.

S.S.O. Gr. II: First Class B.Tech. in Civil Engg. with 3 years relevant experience or M.Tech. in Civil Engg. with one year relevant experience.

Research Associate: (1) Synthesis of monomers & Polymers (2) Polymer blends and composite (3) Polymer processing structure—property relationship in polymers (4) Thin film technology, infrared and electro optical, acousto-elastic devices (5) Crystal growth and characterisation of materials and solid state electronic devices (6) Building materials.

Senior Research Assistant/Sr. Tech. Asstt.: First Class B. Tech. in Civil Engg. Final year students with outstanding academic record may also apply. Their selection/appointment will be subject to getting a 1st Class Degree.

17. PUBLIC RELATION OFFICER

Qualifications

A Master's Degree with at least a second class either at the Bachelor's or at the Master's level. Diploma in Journalism or Mass Communication with 5 years experience in editing and production of technical and non-technical literature; public relations; organising conferences; seminar/symposia, etc; advertising and publicity. The candidates should have excellent command of the English language, both spoken and written, and have pleasant personality with proven organising abilities.

Desirable

A Bachelor's Degree in Science/Engineering with Diploma in Public Relations/Journalism.

Qualifications may be relaxed in the case of candidates with more than 10 years' experience in the field of editing and production of publications, public relations, advertising and publicity.

In the case of candidates who have a first/second class Diploma in Journalism, second class degree at the Bachelor's/Master's level may not be insisted upon.

18. SECURITY OFFICER

Qualifications

(1) Matric, preferably Graduate (2) Officer for atleast 5 years in military, N.C.C., para military organizations, police or security organisation. (3) Conversant with security procedures and liaison with police.

Note

The post is reserved for Scheduled Caste/Tribes candidates. If suitable SC/ST candidates are not available the post will be treated as unreserved and filled from general candidates, who may also apply.

19. DEPUTY LIBRARIAN

Qualifications

(1) First or Second Class M.A./M.Sc./M.Com. plus First or Second Class B.Lib. Science or Diploma in Library Science. Candidates possessing the degree of M.Lib. Science will be preferred. (2) At least 7 years' experience as

Librarian or in a responsible capacity in a Library. (3) Research experience with publications.

Desirable

Experience should be inclusive of 2 years in handling one or more reprographic facilities and audiovisual equipments like photo-copies, zerox machines projectors, small offset printing machines etc.

The incumbent will be required to look after the Reprographic Unit in the Library in addition to other usual responsibilities of Deputy Librarian and performing night duty also.

20. WORKSHOP SUPERINTENDENT

Qualifications

(1) Degree in Mechanical Engg. or equivalent (2) Experience of 5 years in a general engineering workshop in a responsible capacity covering, planning, production, estimating administration and control of labour.

Desirable

Teaching experience

Duties: (1) To take charge of training workshop of the Institute comprising Machine shop, Fitting, Foundry, Welding, Carpentry and Sheet Metal Shops etc, etc. (2) Practical training of students and apprentices (3) Maintenance and erection of laboratories and other engineering installations (4) Teaching of subjects related to Production Technology.

21. INDUSTRIAL LIAISON OFFICER (TRAINING & PLACEMENT)

Qualifications

A Good Degree in Science, Engineering, Technology or Management or equivalent with a minimum 10 years' experience in teaching research, training of engineering, personnel, industry or academic administration.

Duties: The incumbent of the post will be responsible for organizing the training & placement activity of the Institute. He would also be responsible to maintain liaison with the Institute alumni and obtain necessary feedback for curricula revaluation, etc.

22. INDUSTRIAL LIAISON OFFICER (Consultancy)

Qualifications

A Good Degree in Science, Engineering, Technology or Management or equivalent with a minimum of 10 years' experience in teaching, research, industry or academic administration.

Duties: The incumbent of the post will be responsible for organising the industrial consultancy and sponsored research activities of the Institute. In addition he will also look after the planning & development work of the Institute.

General

Prescribed application form as well as a more detailed description of the post may be obtained from the Superintendent (E-I), Indian Institute of Technology, Delhi, New Delhi-110029 either in person or by sending a self-addressed stamped envelope (10×23cm)

bearing postage stamps of 30p. Candidates from abroad may apply on plain paper giving an account of their academic and professional record, reprints and publications and names of at least two persons well acquainted with their professional work. Candidates selected for appointment will be required to join duty immediately or as soon as possible thereafter.

Reservation of posts exists for Scheduled Caste/Tribes candidates, as per Government of India rules, except for the excluded posts of Professor and Assistant Professor.

Last date of receipt of completed applications forms along with attested copies of certificates/testimonials etc. (10 copies of publications) together with a crossed Indian Postal Order for Rs. 7.50 (Rs. 1.87 for SC/ST candidates) for posts at Sl. No. 1 to 16 and Rs. 3/- (Rupee 0.75 for SC/ST candidates) for posts at Sl.No. 17 is 5-5-1979 (19-5-1979 for candidates from abroad).

Persons employed in Govt./Semi-Govt. Organisation/Autonomous Bodies should submit the applications through their employer.

BIDHAN CHANDRA KRISHI VISWA VIDYALAYA

P.O. MOHANPUR, WEST BENGAL

Advertisement No. Apptt./2/79

Applications in prescribed forms are invited for the following posts on the scales mentioned below plus allowances as admissible under the rules of the Viswa Vidyalaya:

A. Reader in Agronomy (Two Posts—One Post temporary against lien vacancy) in the scale of Rs. 1200-50-1300-60-1900/-

Qualifications: Essential

(i) A consistently good academic record with First or high second class (B+) Master's degree in Agronomy following a good degree in Agriculture; (ii) A Doctoral degree in Agronomy; (iii) At least 5 years teaching experience preferably at the post-graduate level; (iv) Capacity to conduct and guide research as evident from published papers.

B. Lecturer in the Department of Agril. Entomology (One Post temporary against a lien vacancy which is likely to be permanent) in the scale of Rs. 700-40-1100-50-1600/-

Qualifications: Essential

(i) A consistently good academic record with 1st or high 2nd Class (B+) Master's degree in Agril. Entomology following a good degree in Agriculture; (ii) A Doctoral degree in relevant subject at (i) or published work of an equally high standard; (iii) At least 2 years experience of teaching/Research.

C. Assistant Soil Chemist (One post—temporary) in the scale of Rs. 700-40-1100-50-1600/-

Qualifications: Essential

(i) A consistently good academic record with 1st or high 2nd class (B+) Master's degree in Soil Science/Agril.

Chemistry following a degree in Agriculture; (ii) At least 2 years Research experience in the field of Soil Science or Agricultural Chemistry; (iii) A Doctoral degree in relevant subject at (i), or published work of equally high standard.

D. Research Assistant (Two posts temporary under the scheme entitled All India Coordinated Potato Improvement Project) in the scale of Rs. 325-15-475-EB-20-575/-

Qualifications: Essential

(i) Consistently good academic record with 1st or high 2nd Class (B+) Master's degree in Plant Breeding and Genetics/Entomology following a degree in Agriculture.

Desirable

Experience in Research on Potato Crops and acquaintance with the agricultural condition in West Bengal.

E. Technical Assistant Grade-III (For preparing a Panel of Selected Candidates for the Faculty of Agriculture) in the scale of Rs. 180-10-210-15-300-EB-20-440/-.

Qualifications: Essential

(i) At least a high 2nd class B.Sc. (Ag.) Hons. degree.

F. Technical Assistant Grade III (3 posts temporary) for Basic Science & Humanities in the scale of Rs. 180-10-210-15-300-EB-20-440/-.

Qualifications: Essential

(i) A degree in Science with Honours in Chemistry/Botany/Zoology with at least 2 years experience in a Laboratory preferably in an educational Institution.

Desirable

For Chemistry—experience in common bio-chemical techniques in an educational Institutions.

G. Junior Dairy Technologist (One post temporary) in the scale of Rs. 300-25-650/-.

Qualifications: Essential

A degree in B.Sc.(Dairy Tech.) or B.Sc. with I.D.D.(D.T.)

Desirable

Two years experience in Teaching or Plant work.

H. Junior Dairy Bacteriologist (One post temporary) in the scale of Rs. 300-25-650/-.

Qualifications: Essential

A degree in B.Sc.(Dairy Technology) or M.Sc.(Dairy Bacteriology/Microbiology) or B.Sc.(Microbiology) with 2 years experience in any Food Laboratory.

Desirable

Experience in Microbiological Analysis of Dairy/Food Products.

I. Junior Dairy Chemist: (One post temporary) in the scale of Rs. 300-25-650/-.

Qualifications: Essential

A degree in B.Sc.(Dairy Technology) or B.Sc.(Chem.) with I.D.D.(D.T.)

Desirable

Two years experience in the Chemical Analysis of Dairy Food Products.

J. Research Assistant (One post temporary under the Scheme entitled All India Coordinated Project on Floriculture) in the scale of Rs. 325-15-475-EB-20-575/-.

Qualifications: Essential

Consistently good academic record with a first or high Second class (B+) Master's degree in Horticulture with specialization in Floriculture following a good degree in Agriculture.

Desirable

(i) Two years research experience preferably in ornamental plants; (ii) knowledge of flower cultivation in West Bengal.

Scales of pay for the post at "D" to "J" are unrevised and are likely to be revised.

Age

(i) for post at A—Preferably below 45 years; (ii) for posts at B to C—preferably below 40 years; (iii) for posts at D to J—below 30 years.

Experience and age limit may be relaxable on the recommendation of the Selection Committee in the case of a candidate otherwise qualified. A high initial pay in the scale may be granted on the basis of qualifications, experience and present emoluments.

Application must be submitted in the prescribed form which may be obtained from the Office of the REGISTRAR, BIDHAN CHANDRA KRISHI VISWA VIDYALAYA, P.O. MOHANPUR, DIST. NADIA, WEST BENGAL PERSONALLY OR BY sending a self addressed envelope (25 cm x 12 cm) stamped 0.40(Forty paise) only on payment of Rupees Eight (Rs. 8.00) for posts at A,B,C,D, & J and Rupees Three (3.00) for posts at E to I only by Crossed Indian Postal Order in favour of the BIDHAN CHANDRA KRISHI VISWA VIDYALAYA. Forms will be available from the Office of the undersigned between 11.00 a.m. and 4.00 p.m. on week days (11.00 a.m. to 1. p.m. on Saturdays). Persons already in employment should apply through proper channel. Candidates abroad may also apply on plain paper with necessary Postal Order. Applications completed in all respects should be submitted in envelope superscribed with the name of the post and must reach THE OFFICE OF THE REGISTRAR BY THE 7th May, 1979.

Candidates called for interview will have to appear for the same at their own cost.

A. K. Mitra
REGISTRAR (Actg.)

**MADURAI KAMARAJ
UNIVERSITY**

MADURAI-625 021

Notification No.3/V/Advt/79

Applications in the prescribed form are invited for the following posts in the Institute of Correspondence Course and Continuing Education of the University.

D. partment of English
Professor — One

Department of Political Science

Professor — One
Reader — One
Lecturers — Four

Department of Economics

Professor — One
Lecturers — Six

Department of History

Professor — One
Lecturers — Four

Department of Commerce

Professor — One
Lecturers — Two

Department of Law

Professor — One
Lecturers — Three

Department of Education

Reader in Education — One
Lecturer in Mathematics — One
Lecturer in Tamil — One
Lecturer in English — One
Lecturer in History — One
Lecturer in Economics — One
Lecturer in Political Science — One
Lecturer in Commerce — One
Lecturer in Geography — One

Scale of Pay

Professor — Rs. 1500-60-1800-100-2000-125/2-2500
Reader — Rs. 1200-50-1300-60-1900
Lecturer — Rs. 700-40-1100-50-1600

General Qualifications

Professor

A first or high second class Master's degree and a Ph.D. degree in the subject with not less than 10 years teaching and/or research experience.

Reader

A first or high Second Class Master's degree and a Ph.D. degree in the subject with not less than 5 years teaching and/or research experience.

Lecturer

A first or high Second Class Master's degree and a Ph.D. degree in the subject with not less than 3 years teaching experience.

Preference would be given to Scheduled Caste/ Scheduled Tribe candidates who are considered fit in respect of Lecturers.

Appointment of persons on deputation will also be considered, if the candidates are found suitable and the employer is agreeable to spare the services.

The prescribed form of application and full details regarding qualifications and experiences required can be got from the undersigned on requisition accompanied by (1) a self-addressed envelope with postage stamps to the value of Re.1/- affixed thereon and (2) State Bank of India challan for Rs. 5/- (Account No. 1) or Demand Draft for Rs. 5/- payable at Madurai drawn in favour of the Registrar, Madurai Kamaraj University, Madurai-625021.

The last date for receipt of requisition for the prescribed form of applications is 8th May 1979 and the last date for receipt of filled in applications is 15th May 1979. Applications received after the due date will not be considered.

B. Murugan
REGISTRAR

LUCKNOW UNIVERSITY

LUCKNOW-226007

Advertisement No. 6/1979

Applications are invited for the following posts:-

Professor in the Grade of Rs. 1500-60-1800-100-2000-125/2-2500:

1. One Professor of Political Science
2. One Professor in Regional Centre for Research and Training in Municipal Administration, Department of Public Administration.

Qualifications

Essential

1(a) A doctorate in the subject of study concerned or a published work of a high standard in that subject; and

(b) Consistently good academic record (that is to say, the overall record of all assessments throughout the academic career of a candidate) with first class or high second class (that is to say, with an aggregate of more than 54% marks) Master's Degree in the subject concerned or equivalent degree of a foreign University in such subject.

Where the Selection Committee is of the opinion that research work of a candidate as evidenced either by his thesis or by his published work, is of a very high standard it may relax any of the qualifications specified in sub-clause (b) of clause 1.

2. Experience of teaching post-graduate classes for not less than seven years and/or having conducted and successfully guided research work for seven years in a recognised Institution and having published work of high standard in the subject concerned.

Preferential

High academic distinctions.

Readers in the Grade of Rs. 1200-50-1300-60-1900

3. One Reader in Anthropology
4. One Reader in Library Science
5. One temporary Reader in Economics (likely to be made permanent)
6. One temporary Reader in Labour Economics, Deptt. of Economics (likely to be made permanent)
7. Two temporary Readers in Law (likely to be made permanent)
8. One temporary Reader in Commercial Law (likely to be made permanent)

Qualifications (for posts nos. 3 to 6)

Essential

1(a) A doctorate in the subject of study concerned or a published work of a high standard in that subject; and

(b) Consistently good academic record (that is to say, the overall record of all assessment throughout the academic career of a candidate) with first or high second class (that is to say, with an aggregate of more than 54% marks) Master's Degree in the subject concerned or equivalent degree of a foreign University in such subject.

Where the Selection Committee is of the opinion that the research work of a candidate, as evidenced either by his thesis or by his published work is of a very high standard, it may relax any of the qualifications specified in sub-clause (b) or clause 1.

2. Experience of teaching honours/

post-graduate classes for not less than five years and published research work of high standard in the subject.

Preferential

Experience of teaching post-graduate classes and guiding research.

Qualifications (for posts nos. 7 & 8)

Essential

First or high second class Master's degree and Doctorate in the subject concerned with a good academic record and experience of teaching honours/post-graduate classes for not less than five years and published work of high standard in the subject.

Preferential

Experience of teaching post-graduate classes and guiding research.

Note

The essential degree qualifications for the posts of Readers in the Faculty of Law shall be deemed to, be satisfied if the candidate holds LL.M. Degree.

Ability to teach LL.B. classes through the medium of Hindi essential.

Lecturers in the Grade of Rs. 700-40-1100-50-1600

9. Two temporary Lecturers in Public Administration (likely to be made permanent)
10. One temporary Lecturer in Geography (likely to be made permanent).

Qualifications: Essential

(a) A doctorate in the subject of study concerned or published work of a very high standard in that subject; and

(b) Consistently good academic record (that is to say, the overall record of all assessments throughout the academic career of a candidate) with first class or high second class (that is to say, with an aggregate of more than 54% marks) Master's Degree in the subject concerned or equivalent degree of a foreign University in such subject.

Where the Selection Committee is of the opinion that the research work of a candidate, as evidenced either by his thesis or by his published work, is of a very high standard, it may relax any of qualifications specified in sub-clause (b) supra.

Preferential

Experience of teaching degree/honours/ post-graduate classes for two years.

General

For purposes of qualifications required for the above posts, the degree obtained in a subject taught in a Department which is subsequently constituted into separate Departments shall be deemed to be degree in the subject concerned for the newly constituted Departments.

Benefits of Provident Fund available as admissible under the rules on confirmation for permanent posts. Period of probation for permanent posts is one year. It is not necessary to fill any/all of the advertised posts.

For the posts of Lecturers, other things being equal preference will be given to Scheduled Castes/Tribes candidates, who are considered fit. Such candidates should indicate in their applications that they belong to Scheduled Castes/Tribes, attaching certificate from

the District Magistrate of the District to which they belong. No other certificate for this purpose will be entertained. In case of Scheduled Caste/Scheduled Tribe candidates interviewed by the Selection Committee, if suitable candidates are not available for appointment to the posts of Lecturers, the Selection Committee, may recommend appointment of suitable candidate as Research Associate in the scale of Rs. 700-1300 for a period of three years and these persons could later compete for the posts of Lecturers as and when vacancies occur.

Applications on the prescribed form (available on request, accompanied with a self-addressed envelope of size 23 cm x 10 cm, free of cost, from the Registrar), with recent testimonials, publications etc. should reach Office of the Registrar, Lucknow University, by Tuesday, May 15, 1979. The candidates who are in service must send their applications through proper channel. Application Forms to outstation candidates will be issued by post upto May 8, 1979.

REGISTRAR

INDIAN INSTITUTE OF TECHNOLOGY: DELHI

HAUZ KHAS, NEW DELHI-110029

CORRIGENDUM

Reference: Advertisement No. 10/79

The Field of Specialisation in the above mentioned advertisement of this Institute under the Department of Chemistry for the post of Lecturer may be read as given below:

Field of Specialisation

Bio. Inorganic, Organic, Polymer and Physical Chemistry.

Last date for receipt of completed application form for the above post will be 10-5-79 (24-5-79 for candidates from abroad)

KURUKSHETRA UNIVERSITY

KURUKSHETRA

Advt. No. 4/79

Applications are invited for the following posts:

1. Professors in (Ancient Indian History Cul. & Arch (1), History (1), Mathematics (2), Education (1), Rs. 1500-60-1800-100-2000-125/2-2500.
2. Readers in Sanskrit, Philosophy, Botany, Zoology, Political Science Punjabi, Mathematics, English (one each). Rs. 1200-50-1300-60-1900.
3. Lecturers in Education (2), Punjabi (1), Mathematics (2 Regular & 2 temporary), English (1), Psychology (1), Management (1). Rs. 700-40-1100-50-1600.
4. DPE (1) (For University College). Rs. 350-25-450/30-600.
5. ADPE (For University Teaching Departments). Rs. 300-25-450/25-600.

Qualifications

For the post of Professor

An eminent scholar with published work of high quality, actively engaged

in research. Ten year's experience of teaching and/or research. Experience of guiding research at Doctoral level.

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge.

For the post of Readers

Good academic record with a Doctoral degree or equivalent published work. Evidence of being actively engaged in research. At least 5 years' experience of teaching preferably of postgraduate classes.

This condition may be relaxed in the case of candidates with outstanding research work.

For the post of Lecturers

(a) A Doctor's Degree or research work of an equally high standard; and

(b) Consistently good academic record with Ist or high 2nd class (B in the seven point scale). Master's degree in a relevant subject or an equivalent degree of a foreign University.

Having regard to the need for developing inter-disciplinary programmes, the degrees in (a) and (b) above may be in the relevant subjects.

Provided that if the Selection Committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard, it may relax any of the qualifications prescribed in (b) above.

Provided further that if a candidate possessing a Doctor's Degree or equivalent research work is not available or is not considered suitable, a person possessing a consistently good academic record (weightage being given to M.Phil. or equivalent degree or research work of quality) may be appointed provided he has done research work for atleast two years or has practical experience in a research Laboratory/Organisation on the condition that he will have to obtain a Doctor's degree or give evidence of research work of equivalent high standard within five years of his appointment failing which he will not be able to earn future increments until he fulfils these requirements.

For the post of DPE (For University College) and Assistant Director of Physical Education (University Teaching Departments):

Atleast 2nd class Master's degree in Physical Education of an Indian University or an equivalent qualification of a foreign University in Physical Education or Master's degree in any Arts/Science subject with at least 2nd class Diploma in Physical Education. The candidates should have three years' experience, relaxable in suitable cases.

Specialisation required for the following posts:

Professor in History: Medieval Indian History.

Professors in Mathematics: (i) Mechanics of Solids; (ii) Applied/Pure Mathematics.

Reader in Mathematics: Numerical Analysis/Computer Arithmetic/Computer Software (Preference will be given to those who can teach digital computer fundamentals and machine/assembly

languages of systems TDC-316 & TDC-12.

Reader in Political Science: State Politics with special reference to Haryana.

Reader in English: Some area of late nineteenth or twentieth Century American Literature.

Lecturers in Mathematics: Applied/Pure Mathematics/Operations Research/Numerical Analysis/Computer Science/Mathematical Statistics.

Lecturers in Education: (i) Economics of Education & Educational Finance; (ii) Educational Technology.

Lecturer in Management: Financial Management & Accounting/Production Management.

Note

Candidates having experience in the Industry, Business or Govt. in an administrative/managerial capacity for one or more years will be preferred.

Knowledge of Hindi desirable. Usual allowances, PF etc. admissible as per University Rules. In case of Lecturers and non-teaching posts 20% and 2% posts are reserved for Scheduled Castes and Backward Classes respectively, but in the case of non-teaching posts 30% posts are reserved for Ex. Servicemen also. However, if suitable candidates for these reserved posts are not available, these shall be treated as unreserved.

Applications (through proper channel) for those in employment on the prescribed form obtainable from the Assistant Registrar (Estt.) Kurukshetra University, Kurukshetra for posts at Sr. Nos. 1, 2 & 3 and on plain paper for the posts at Sr. Nos. 4 & 5 along with attested copies of certificates/testimonials and accompanied by Crossed Indian Postal Orders for Rs. 7-50 drawn in favour of the Registrar, Kurukshetra University, Kurukshetra and payable at the University Post Office should reach the Assistant Registrar (Estt.) on or before 15-5-1979. Ex-Servicemen are exempted from application fee.

REGISTRAR

ALIGARH MUSLIM UNIVERSITY ALIGARH

Advertisement No. 1/79-80

Applications, on the prescribed form, are invited for the following posts:

1. Professor of Electrical Engineering (Plan Post), Scale Rs. 1500-60-1800-100-2000 125/2-2500 plus allowances.

Qualifications

A first or high second class Basic Degree in Electrical Engineering. Ordinarily post-graduate Degree in Electrical Engineering. Ordinarily ten years' experience of which five years' should be in a position of responsibility in teaching in an Engineering Institution of a degree standard and/or research.

Desirable

Published research work. Specialisation in Communication Engineering.

2. Professor of Law (Temporary) Scale Rs. 1500-60-1800-100-2000-125/2-2500 plus allowances.

Qualifications: Ordinarily required

(a) A first or high second class Master's Degree in Law of an Indian University or equivalent foreign qualification, (b) Research Degree of a Doctorate standard or published work of a high standard; and (c) Atleast ten years' experience of teaching post-graduate classes and guiding research.

3. Reader in Law (Temporary) Scale Rs. 1200-50-1300-60-1900 plus allowances.

Qualifications: Ordinarily required

(a) A first or a high second class Master's Degree in the subject concerned of an Indian University or an equivalent foreign qualification; (b) A research degree of a doctorate standard or published work of a high standard; and (c) Atleast five years experience of teaching postgraduate classes and some experience of guiding research.

Prescribed application form and instructions may be had from the Dy. Registrar (Ex.) either personally or by sending a self addressed envelope of 23 x 10 cm. Last date for receipt of applications is 17th May 1979. Incomplete applications and those received late may not be considered.

Higher initial start may be given to candidates possessing exceptional qualifications and experience. Candidates interviewed may be paid contribution towards their T.A. equal to one single Second Class Railway fare only.

Jamalur Rahman
REGISTRAR

BIDHAN CHANDRA KRISHI VISWA VIDYALAYA

P.O. MOHANPUR, WEST BENGAL

Advertisement No. Apptt/3/79

Applications are invited in prescribed forms for the following posts in the North Bengal Campus of the Viswa Vidyalaya at Cooch-Behar in the scale mentioned below with the benefits of D.A. and other allowances as admissible under the rules:

A. Professor-in-Charge: (One Post) in the scale of Rs. 1500-60-1800-100-2000-125/2-2500

Qualifications: Essential

(a) Consistently good academic record with First or high second class (B+) Master's degree in any branch of Agril Science or science basic to Agriculture or recognised equivalent qualifications (e.g. Assoc. I.A.R.I.) following a good Bachelor's degree;

(b) A Doctoral degree in relevant subject as (a) above;

(c) At least 10 years' experience of teaching preferably at Post-graduate level;

(d) Demonstrated capacity of leadership in the field of academic administration in a University/Institute for at least 5 years preferably in an Agricultural College/University;

(e) Knowledge of Agriculture and Agricultural conditions in the country, preferably in the State of West Bengal.

Age: Preferably below 50 years.

B. Reader (10 Posts)—one post each for (i) Agronomy, (ii) Horticulture, (iii) Genetics & Plant Breeding, (iv)

Agril. Entomology, (v) Plant Pathology (vi) Agril. Chemistry & Soil Science, (vii) Agril. Extension, (viii) Agril. Engineering, (ix) Agril. Economics, (x) Agriculture Statistics: in the scale of Rs. 1200-50-1300-60-1900.

Qualifications: Essential

(a) Consistently good academic record with 1st or high 2nd class (B+) Master's Degree in Agronomy/Horticulture/Genetics and Plant Breeding/Agril. Entomology/Plant Pathology/Agril. Chemistry & Soil Science/Agril. Extension/Agril. Engineering/Agril. Economics/Agril. Statistics or recognised equivalent qualifications (e.g., ASSOC. IARI) with specialization as given below for each following degree in Agriculture. Field of Specializations in any branch of the relevant subject mentioned.

(a) above

(b) A doctoral degree in relevant subject at (a) above;

(c) Five years experience of teaching preferably at post-graduate level;

(d) Capacity to conduct & guide Research as evident from published papers.

Age: Preferably below 45 years

C. Lecturer: (10 Posts)—One post each for (i) Agronomy; (ii) Horticulture (iii) Genetics & Plant Breeding; (iv) Agril. Entomology; (v) Plant Pathology; (vi) Agril. Chemistry & Soil Sc.; (vii) Agril. Extension; (viii) Agril. Engineering; (ix) Agril. Economics; (x) Agril. Statistics in the scale of Rs. 700-40-1100-50-1600.

Qualifications: Essential

(a) Consistently good academic record with 1st or high 2nd Class (B+) Master's Degree in Agronomy/Horticulture/Genetics & Plant Breeding/Agril. Entomology/Plant Pathology/Agril. Chemistry & Soil Science/Agril. Extension/Agril. Engineering/Agril. Economics/Agril. Statistics or recognised equivalent qualifications (e.g. ASSOC IARI) following a degree in Agriculture; (b) At least two years experience of teaching/research;

(c) A doctoral degree in relevant subject at (a) above or published work of an equally high standard.

Age: Preferably below 40 years.

D. Lecturer in Animal Production and Management (one post) in the scale of Rs. 700-40-1100-50-1600.

Qualifications: Essential

(a) Consistently good academic record with 1st or high 2nd Class (B+) Master's degree in Animal Breeding/Animal Nutrition/Animal Production & Management following a degree M.V.Sc. and A.H./B.Sc. (Ag.)

(b) A doctoral degree in relevant subject at (a) above or published work of an equally high standard;

(c) At least two years experience of teaching/research.

Age: Preferably below 40 years.

E. Technical Assistant Grade-III (For preparing a panel of Selected Candidates) in the scale of Rs. 180-10-210-15-300-EB-20-440/- (Unrevised—likely to be revised).

Qualifications: Essential

(i) At least a high second class B.Sc. (Ag.) Hons. Degree.

Age: Below 30 years.

Qualifications for posts at "C" and "D" are relaxable in the case of candidates who are otherwise exceptionally qualified.

Experience and age limit may be relaxable on the recommendations of the Selection Committee in the case of a candidate otherwise qualified. A higher initial pay in the scale may be granted on the basis of qualifications, experience and present emoluments.

Selected candidates will be required to reside at Cooch-Bihar.

Applications must be submitted in the prescribed form which may be obtained from the Office of the Registrar, Bidhan Chandra Krishi Viswa Vidyalaya, P.O. Mohanpur, Dist Nadia, West Bengal personally or by sending a self addressed envelope (25cm x 12cm) stamped 0.40 (Forty paise) only on Payment of Rupees Eight (8.00) for posts at 'A', 'B', 'C' & 'D' and Rupees Three (Rs. 3.00) for post at 'E' only by crossed Indian Postal Order in favour of the Bidhan Chandra Krishi Viswa Vidyalaya. Forms will be available from the Office of the undersigned between 11.00 am to 4.00 p.m. on week days (11.00 a.m. to 1.00 p.m. on Saturdays). Persons already in employment should apply through proper channel. Candidates abroad may also apply on plain paper with necessary Postal Order. Applications completed in all respects should be submitted in envelope superscribed with the name North Bengal Campus along with the post and must reach the Office of the Registrar by the 18th May 1979.

Candidates called for interview will have to appear for the same at their own cost.

A.K. Mitra

REGISTRAR (Actg.)

OSMANIA UNIVERSITY

HYDERABAD - 500 007

Advertisement No. 8/1979

Applications, in the prescribed from

together with the registration fee of Rs 5/- are invited for the following posts in the University Service, so as to reach the undersigned on or before 14-5-1979.

Readers in Education/Mathematics & Geology: Rs 1200-50-1300-60-1900
Lecturers in Geology/Marathi/Genetics/Law and Linguistics: Rs 700-40-1100-50-1600.

Age: Readers—Not more than (40) years

Lecturers—Not more than (35) years.

Note: 1. Age limit does not apply to the employees of this University.

2. Relaxation in age to the extent of five years may be granted to candidates belonging to SCs., STs, and B.C., respectively in the case of Lecturers only

3. Age relaxation can be considered in deserving cases.

14%, 4% and 25% reservations are made for Scheduled Castes, Scheduled Tribes and Backward Classes respectively in case of Lecturers only.

Application forms can be had from the Director, Department of Publications and University Press, Osmania University, Hyderabad—500 007, A.P. on payment of Rs. 4.50 in person or by money order or by a postal order UNCROSSED made payable to the Director and by sending a self-addressed envelope (11½ x 26½ cms.) duly stamped for ordinary or registered post.

A latest passport size photograph should be fixed on the application form. No original certificate should be enclosed to the application form.

Full particulars can be obtained on requisition from the Director, Osmania University Press, free of cost, by sending a self-addressed stamped envelope.

B. Ramchandra Reddy
REGISTRAR

THE UNIVERSITY OF KASHMIR

SRINAGAR-190006

No: F.10(App.Gen)KU/Adm/79

Notice

Applications in the prescribed forms are invited for the following posts which should reach the under-signed by or before 21st May, 1979 :

Sl. No.	Department	POSTS		
		Professor	Reader	Lecturer
1.	Physics	One	One	—
2.	Central Asian Studies	—	One (Sanskrit)	—
3.	Geography	—	One	—
4.	Iqbal Institute	—	One	One
5.	Mathematics	—	One	One (Temp.)
6.	Persian	—	—	Three (Including two temp. (likely to become permanant)
7.	Political Science	—	One	—
8.	Zoology	—	One	—

The prescribed application forms can be had from the Registrar, University of Kashmir, Srinagar, on cash payment of Rs. 6/- or by sending a crossed Postal Order drawn in favour of the Registrar cashable at Srinagar Post Office alongwith a self addressed envelope (5" x 11") with the necessary postage stamps.

While making a request for the application forms, candidates are advised in their own interest to send their detailed curriculum vitae.

The details in respect of essentials and desirable qualifications for the posts can be had from the office of the under-signed.

Peerzada Gh. Hassan
DEPUTY REGISTRAR
(Administration)

JAWAHARLAL NEHRU UNIVERSITY

NEW DELHI-110067

Adv. No. Aca. III/6/79

Applications are invited for the position of Professor in Educational Studies in the Zakir Husain Centre for Educational Studies against a leave vacancy for a period of one year in the first instance.

Qualifications: Essential

1. Consistently good academic record with at least a high second class master's degree in Social Sciences or an equivalent qualification from an Indian/foreign University;
2. A Doctor's Degree or published work of an equally high standard in a field which should be relevant to the area of Educational Studies;
3. About 10 years' experience of teaching and/or research in a field which should be relevant to the area of Educational Studies.

Desirable

1. Master's degree in Economics or Sociology or Psychology or History;
2. Ph.D. in an area of Educational Studies or a Ph.D. in Economics or Sociology or Psychology or History with professional experience at sufficiently high levels in Educational Administration or Educational Planning;
3. Evidence of high proficiency in handling mathematical and / or quantitative analysis; and
4. Evidence of having successfully guided doctoral work.

Relaxation in any of the qualifications may be made (a) in favour of persons of eminence or of high academic/professional distinction, and (b) in exceptional cases where adequately qualified persons are not available but are otherwise found suitable for the position. It will also be open to the University to consider the names of suitable candidates who may not have applied.

The selected candidates for faculty position will be expected to participate in the teaching and research programmes in the concerned discipline in other Schools of the University as well as in the programmes offered in their own Centres of Studies.

Persons already in employment should route their applications through proper channel.

Applications on the prescribed form, obtainable free of cost from the University by sending a self addressed and stamped envelope of 23 x 20 cm size to the Deputy Registrar (Academic) Jawaharlal Nehru University, New Mehrauli Road, New Delhi-110067 should reach him latest by 11.5.1979

Candidates from abroad, applying for faculty position, may apply on plain paper (but their applications should reach the University by the last date) furnishing all the relevant information such as their names; date and place of birth; marital status; nationality; state of domicile; postal and permanent addresses; father's name and address; academic and professional attainments, full details of (a) publications, and (b) research projects undertaken; language(s) known; details of visits to foreign countries; and the names and addresses of at least two persons well acquainted with the candidates profes-

sional work who should also be requested by the candidates to forward to the Deputy Registrar (Academic) confidential report concerning the candidates.

UNIVERSITY OF INDORE

UNIVERSITY HOUSE

INDORE-452 001.

No. Estt./III(5)/79 Dated: April'79.

Advertisement

Applications are invited for the post of Controller, University Printing Press in the pay scale of Rs. 700-50-1250/-. Dearness and other Allowances and benefit of Provident Fund will be admissible according to the University Rules.

Essential Qualifications

- (a) Second class Bachelor's degree in Arts, Science, Commerce or Engineering and also Diploma in Printing and allied Trades from a recognised technical Institution/School/College of Printing in India;
- (b) At least 7 years experience in a responsible Supervisory capacity on a scale of pay not lower than Rs. 350-600/- in a printing press having modern mechanical composing, automatic printing machine etc.
- (c) Thorough knowledge of hand and mechanical composing, printing, machine minding, binding, and all branches of printing trade knowledge of copy fitting, manuscript, editing, types, preparation of layout and display etc.
- (d) Must have good knowledge of Hindi and English.

Age: Preferably below 50 years.

Note

- (i) Candidates with outstanding record of Press Management and/or as practising printers with conspicuous success in their line can be considered for exemption from the Diploma in Printing Technology.
- (ii) Candidates with outstanding technical qualifications and experience can be considered for relaxation in the requirement of academic qualifications shown at 2(a) above.

A higher initial start may be given to a candidate with higher qualifications and experience. Preference will be given to Scheduled Caste and Scheduled Tribe candidates if found suitable. Candidates already in service should apply through proper channel.

Applications may be made on plain paper giving full particulars of all examinations passed alongwith copies of Mark-sheets and Certificates of experience together with a Crossed Postal Order of Rs. 7/-, payable to the Registrar, University of Indore, Indore so as to reach the undersigned not later than 26.5.1979. The envelope should be marked "Application for the post of Controller, University Press."

Those candidates who had applied in response to our Advertisement No. Estt./III(1)/75-77 dated 21st September 77 need not apply again. They should however intimate to the University on or before 26.5.1979 their desire for consideration of their candidature for the said post.

The University reserves the right to fill-up or not to fill-up the post and/

or to call only selected candidates for interview at their own cost.

A.G. Sharma
REGISTRAR

S.N.D.T. WOMEN'S UNIVERSITY

1, Nathibai Thackersey Road

BOMBAY-400 020

Applications are invited on prescribed forms available from the University Office on payment of Rs. 5/- (by M.O. or cash) for the following posts to be filled in at the Leelabai Thackersey College of Nursing, Bombay-20, so as to reach the undersigned before May 21, 1979.

	Medium	No. of Posts
1. Lecturer in Nursing	English	Three
2. Assistant Lecturer in Nursing	English	One

Qualifications

1. Lecturer

(i) A Doctor's degree preferably in Nursing or behavioural Science or Education or published work of an equally high standard; OR a M.Phil. Degree.

(ii) Consistently good academic record with first or high second class (B+) at Master's Degree and Bachelor's Degree in Nursing Education or Community Health Nursing or Obstetrics or equivalent Degree of a foreign University.

(iii) A person with teaching experience of 5 years or more will be preferred.

Note: Provided that if a candidate possessing the qualifications as at (i) above is not available or not considered suitable the college, on the recommendation of the Selection Committee may appoint a person possessing a consistently good academic record on the condition that she will have to obtain an M.Phil Degree or a recognised degree beyond the Master's level within five years of her appointment, failing which she will not be able to earn future increments till she obtains that degree or gives evidence of equivalent published work of high standard.

2. Assistant Lecturer

(i) Bachelor's Degree in Nursing.

(ii) One year's experience of teaching in a school or a college of Nursing or two year's experience in a hospital or Community Health Nursing field.

(iii) Candidate should be registered under Maharashtra Nurses Act, 1966 or at least be eligible for the registration.

Salary Scales

Lecturer: Rs. 400-40-800-50-950 plus admissible allowances per month (Total initial emoluments about Rs. 950/- per month)

Assistant Lecturer: Rs. 250-15-400 plus admissible allowances (Total initial emoluments about Rs. 700/- per month)

Note

- (a) Only suitable candidates will be called for interview.
- (b) Other things being equal, preference will be given to candidates from Scheduled Castes Scheduled Tribes Other Backward Communities.
- (c) Higher start in the scale will be considered in special cases.

(Smt.) Kamalini H. Bhansali
REGISTRAR

S.N.D.T. WOMEN'S UNIVERSITY1, Nathibai Thackersey Road
Bombay-400020

Applications are invited on prescribed forms available from the University Office on payment of Rs. 5/- (by M.O. or cash) for the following posts to be filled in at the Colleges conducted by the University at Bombay and Poona, so as to reach the undersigned before May 21, 1979.

I. Sir Vithaldas Thackersey College of Home Science, Bombay.**A. Post-Graduate Department**

	Medium	No. of Posts
1. PROFESSOR IN Child Development	English	One
2. READER IN (a) Textile & Clothing, (b) Foods & Nutrition	English English	One One

B. College Level**LECTURER IN**

(1) Education & Extension.	English	One
(2) Textile & Clothing	English	Two

II. S.N.D.T. College of Home Science, Poona**LECTURER IN**

(1) Foods & Nutrition (2) Textile & Clothing (3) Child Development	English/Marathi	One Post for each subject

III. P.V.D.T. College of Education for Women, Bombay**LECTURER IN EDUCATION**

(1) Specialization in History & Maths., or Geography or Hindi	Gujarati	One
(2) Specialization in Hindi & Maths., or Geography or History	Gujarati	One

IV. S.N.D.T. College of Education for Women, Poona

LECTURER IN EDUCATION	Marathi	Five
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**Qualifications
PROFESSOR**

An eminent Scholar with published work of high quality actively engaged in research—ten years experience of teaching and/or research in the subject concerned—experience of guiding research at doctoral level.

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge.

READER

Good academic record at Bachelor's and Master's level in the subject concerned, at least with first or high second class, with a doctoral degree or equivalent published work in the subject concerned. Evidence of being actively engaged in (i) research or (ii) innovation in teaching methods or (iii) production of teaching materials. 5 years experience and/or research provided that at least 3 of these years were as lecturer or in an equivalent position. The condition may be relaxed in the case of candidates with outstanding research work.

LECTURER

(a) Consistently good academic record with at least first or high second class at the Master's level in the subject concerned or an equivalent degree of a foreign University; and

(b) An M.Phil. degree or a recognised degree beyond the Master's level or published work indicating the capacity of a candidate for independent research work.

Notes

(1) Provided that if the Selection Committee is of the view that the research work of a candidate as evident either from his/her published work is of

very high standard, it may relax any of the qualification prescribed in (a) above.

(2) Provided further that if a candidate possessing the qualifications at (b) above is not available or not considered suitable the college, on the recommendation of the Selection Committee may appoint a person possessing a consistently good academic record on the condition that he/she will have to obtain an M.Phil. Degree or a recognised degree beyond the Master's level within five years of his/her appointment, failing which he/she will not be able to earn future increment until he/she obtains that degree or gives evidence of equivalent published work of high standard.

Salary Scales**Professor**

Rs. 1500-60-1800-100-2000-125/2-2500 plus admissible allowances (Total initial emoluments about Rs. 2,000/- per month)

Reader

Rs. 1200-50-1300-60-1900 plus admissible allowances (Total initial emoluments about Rs. 1700/- per month)

Lecturer

Rs. 700-40-1100-50-1300-Assessment-50-1600+admissible allowance (Total initial emoluments about Rs. 1100/- per month)

Notes

(a) Only suitable candidates will be called for interview.

(b) Other things being equal preference will be given to candidates from Scheduled Castes/Scheduled Tribes/Other Backward Communities.

(c) Higher starting salary may be considered in exceptional cases.

(d) Work specification of Posts I(A) and IV be collected with the application forms.

Smt. Kamalini H. Bhansali
REGISTRAR

**KUMAUN UNIVERSITY
NAINITAL****Advertisement No. 132 Dated 18.4.1979**

Applications are invited for the following temporary posts (clear vacancies) likely to become permanent in due course. The number of posts, in brackets, and the required field of specialization, if any, are indicated in each case. Hill Development allowance of Rs. 100/- and dearness allowance as admissible under university rules, will also be payable.

Professors: (Rs. 1500-2500) One each in Economics, Hindi, Political Science, Sociology, Zoology (Entomology), Chemistry, Commerce and Law.

Readers: (Rs. 1200-1900)—One each in English, History (Ancient Indian History or Archeology), Sanskrit, Chemistry (Inorganic/Organic/Physical) with the proviso that the Reader will belong to a branch different from that of the Professor.

Lecturers: (Rs. 700-1600) —Drawing & Painting (1); Economics (1); English (8).

Mathematics: (3)—Complex Variables/Modern Algebra/Topology/Differential Geometry/Numerical Analysis/Number Theory.

Hindi: (5)—Bhasavigyan/Ritikalin Sahitya/Lok Sahitya/Madhyakalin Sahitya/Prachin Sahitya/Sanskrit.

Tourism: (1)—M.A. in Geography/Ancient or Medieval Indian History/Archeology/Economics; experience of tourism as a trade in an official or non-official travel agency.

Preferable: Ph.D. degree and/or Diploma in Tourism.

Qualifications

(1) Consistently good academic record with at least a high second class at Master's level.

(2) Doctorate degree and/or published work of high standard.

(3) At least 10 years experience of teaching post-graduate classes and/or of post Ph.D. research for Professors and 5 years for Readers.

Further details regarding qualifications and service terms will be provided with the application form. Reservation for S.T. S/C candidates as per normal rules.

Prescribed application forms available from the Registrar, Kumaun University, Nainital-263001 on payment of postal charges etc. of Rs. 4/- by crossed Postal Order/Bank Draft (but not money order) payable to Finance Officer, Kumaun University, along with self addressed envelope of size 23 x 10 cm.

Last date for receipt of applications is Thursday, May 31, 1979. Applications received after 31.5.79 will not be entertained.

Candidates who have already applied for any of these posts in February/March 1979 need not apply again.

REGISTRAR

University news

A FORTNIGHTLY CHRONICLE OF HIGHER EDUCATION & RESEARCH MAY 15, 1979



Shri H. S. Brar, Chancellor, Dr. Sarup Singh, M.P. and Dr. P. S. Lamba, Vice-Chancellor, at the Convocation of Haryana Agricultural University held recently in Hissar.

MADURAI KAMARAJ UNIVERSITY

MADURAI-625021

Notification No. 4/V/Advt/79

Applications in the prescribed form are invited for the following posts in the University.

School of Tamil Studies and Indian Languages

1. One Professor in Comparative Dravidian
2. One Reader in Applied Linguistics
3. One Lecturer in Malayalam

School of Biological Sciences

4. One Reader in Environmental Biology
5. One Reader in Neuro Physiology
6. One Lecturer in Human Population Genetics
7. One Lecturer in Plant Genetics
8. One Lecturer in Microbiology
9. One Lecturer in Immunobiology

School of Mathematics

10. One Reader in Mathematics—Temporary
11. One Lecturer in Mathematics

School of Historical Studies

12. One Reader in Medieval History
13. One Lecturer in Modern History

Department of Library Science

14. One Professor of Library Science
15. One Lecturer in Library Science

School of Social Sciences

16. One Reader in Political Science
17. One Lecturer in Sociology

Department of Education

18. One Reader in Education

Department of Commerce

19. One Professor in Commerce
20. One Reader in Commerce
21. One Lecturer in Commerce

Department of Management Studies

22. One Professor in Management Studies
23. One Reader in Management Studies
24. One Lecturer in Management Studies

Scale of Pay

Professor: Rs. 1500-60-1800-100-2000-125/2-2500

Reader: Rs. 1200-50-1300-60-1900

Lecturer: Rs. 700-40-1100-50-1600

General Qualification

Professor

A first or high second class Master's degree and a Ph.D. degree in the relevant subject with not less than 10 years teaching (P.G. Course) and/or research experience including guiding research at doctoral level of which at least 3 years must be of a Reader or a position equivalent thereto.

Reader

A first or high second class Master's degree and a Ph.D. degree in the relevant subject with not less than 5 years teaching (P.G. Course) and/or research experience of which at least 3 years must

be of a Lecturer or a position equivalent thereto.

Lecturer

Consistently good academic record with a first or high second class Master's degree and a Ph.D. degree in the relevant subject with not less than 3 years teaching experience at P.G. level.

Preference would be given to Scheduled Caste/Scheduled Tribe candidates who are considered fit in respect of Lecturers.

Appointment of persons on deputation will also be considered, if the candidates are found suitable and the employer is agreeable to spare the services.

The prescribed form of application and full details regarding qualifications and experience required can be got from the undersigned on requisition accompanied by (i) a self addressed envelope with postage stamps to the value of Re. 1 affixed thereon and (ii) State Bank of India challan for Rs. 5 (Account No. 1) or Demand Draft for Rs 5 payable at Madurai drawn in favour of the Registrar, Madurai Kamaraj University, Madurai-625 021. The number of the notification should be quoted in the requisition i.e. No./4/V/Advt/79.

The last date for receipt of requisitions for the prescribed form of application is 2.6.1979 and the last date for receipt of filled in applications is 9.6.1979. Applications received after the due date will not be considered.

**B. MURUGAN
REGISTRAR**

JAWAHARLAL NEHRU UNIVERSITY

NEW DELHI-110067

Announcement of Faculty Positions in the School of Life Sciences

Advt. No. Aca./III/8/79

The School of Life Sciences has openings for faculty positions in the following areas of specialisation:

I Professor/Senior Fellow—One post in Behavioural Science/Neurobiology

II Associate Professor/Fellow—One each in Plant Development Biology and in Genetics.

Position & Scale of Pay

Professor/Senior Fellow: Rs. 1500-60-1800-100-2000-125/2-2500.

Associate Professor/Fellow: Rs. 1200-50-1300-60-1900.

(Plus usual allowances as admissible to the members of staff in the Central Universities).

Essential Qualifications Professor/Senior Fellow

Consistently good academic record with at least a high second class Master's degree in the relevant discipline or an equivalent qualification from an Indian/foreign University. A doctor's degree or published work of an equally high standard; and about ten years' experience of teaching and/or research in the interdisciplinary area.

Associate Professor/Fellow

Consistently good academic record with at least a high second class Master's degree in the relevant discipline or its equivalent qualification from an Indian/Foreign University. A doctor's degree or published work of an equally high standard; preferably in molecular mechanisms and about Five years' experience of teaching and/or research in the inter-disciplinary area.

Relaxation in any of the qualifications may be made (a) in favour of persons of eminence or of high academic professional distinction, and (b) in exceptional cases where adequately qualified persons are not available but are otherwise found suitable for the respective positions. It will also be open to the University to consider the names of suitable candidates who may not have applied.

The selected candidates will be expected to participate in the teaching and research programmes in the concerned disciplines in other Schools of the University as well as in the programmes offered in their own School.

Normally appointment of Fellows is made on contract basis for a period ranging from one to three years.

Benefits of C.P. Fund-cum-Gratuity/G.P. Fund-cum-Pension-cum-Gratuity are available as per University rules.

Persons already in employment should route their applications through proper channel.

Second Class (mail) rail fare (both ways) will be paid to candidates invited to appear for interview from outstation by the shortest route subject to the production of rail receipt.

Applications, separate for each post, on the prescribed form, obtainable free of cost from the University by sending a self-addressed and stamped envelope of 23cm×10cm size to the DEPUTY REGISTRAR (ACADEMIC) JAWAHARLAL NEHRU UNIVERSITY, NEW MEHRAULI ROAD, NEW DELHI-110067, should reach him latest by 30th May. 1979.

Candidates from abroad, applying for faculty positions may apply on plain papers (but their applications should reach the University by the last date) furnishing all the relevant information such as their names; date and place of birth; marital status; nationality; state of domicile; postal and permanent addresses; father's name and address; academic and professional attainments; full details of (a) publications, and (b) research projects undertaken; language(s) known; details of visits to foreign countries; and the names and addresses of at least two persons well acquainted with the candidate's professional work who should also be requested by the candidate to forward to the DEPUTY REGISTRAR (ACADEMIC) confidential report concerning the candidate.

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Hony. Editor : ANJNI KUMAR

Universities and National Development

[Contributed by the University of Burdwan]

It is a challenging proposition to underline what the role of Universities should be in the National development of the country. In other words, the contribution the Universities should make in the National development is a matter which requires careful study in the context of the social changes taking shape in the country.

It is really a harder task to explain how the process and thinking of National development can be brought within the role of the Universities in a developing country. The concept of National development encompasses not only economic but also development of the whole system of social activities. An integrated approach to the problems of development in all its facets is therefore inescapable. The Universities are therefore required to identify what are the problems of development and how far these can be solved from the point of view of institutions of higher learning. The major problems of National development which apparently concern the social system as a whole are poverty of the masses, unemployment and under-employment, mass illiteracy, unbalanced growth pattern of higher education, health, housing, mal-nutrition, rural backwardness, uncontrolled population and a host of other problems. Just as the national development programmes must take into consideration these problems of the Society and take positive measures to reconstruct the society to meet these basic needs, so also is the responsibility of the Universities to accept the changing concepts of education in a developing country. Obviously no nation can develop in the proper sense of the term unless its educational ideals are closely related to its social structure. This dominant role of the social factors cannot be put to the background if the programme of National development is to be achieved.

The Universities are normally places of higher learning and the exposition that a particular class of privileged persons monopolise their education in such places of higher learning still persists. The Universities were founded at a time when the social thinking that the Universities had their responsibilities to the society was practically absent. Such a thinking is, of course, gradually disappearing and the people have now begun to think that no University and no education for that matter can survive long if its objectives and purposes are not expressed through the society in the form of its betterment and ultimately for National development.

This brings us to certain concepts relating in the changing role of Universities in the national activities. It has been amply demonstrated in the Western countries in America, Japan, Germany and Soviet Russia that the advanced technology and knowledge which are derived from the learning in the Universities are meant for the society as a whole. The fruits of this technology and of humanistic study ought to be transmitted to the social fabrics for the benefit of the society. So the conventional ideas of higher learning which prevailed for quite a long time and has still been prevailing in many areas ought to give place to ideas of cooperation and participation by Universities in National development.

Much thought is now, therefore, being applied to the ideas that the Universities can play a definite role in the National development programme and this takes us to the study of the endeavour made to explain the linkage of Universities in the development of human resources and their proper utilisation. The University planning must impress that the manpower, the technology and the discoveries which it produces ought to be fully geared towards dissemination of knowledge of those who are not educated or trained in University type of education. The question also is how far the Universities can help develop the rural

areas where ninety per cent of the population live in utter state of ignorance. The Universities may enlarge their activities and revitalise the community as a whole through their developed research studies and technology. Such an idea is no doubt gaining grounds. Once the spirit of confidence among the rural people is aroused in the nature of learning the Universities impart through its activities of social work, the life in rural areas will be meaningfully enlightened. The fact that the Universities are really doing something for the development of the community as a whole will brighten the prospects of National development. The commoners in villages do not have any touch with the life in Universities or any knowledge about the techniques of learning, not to speak of higher education which the Universities normally stand for. The distance which the Universities keep from the villages or the rural people can be reduced only by means of their activities and approach to problems connected with the rural development programmes. This ultimately would mean the national development. How the problems of such an approach can be tackled by the Universities is really a matter for research. The curriculum and the materials for learning which the Universities prescribe should be so framed that these do really give some sort of linkage with the education of the masses and the type of education which it imparts should be related to the needs of the society. No development of real worth can be pursued without the services of education to the society. This being the accepted proposition, the national development programme should also be oriented in a manner that it fits in with the educational structure of Universities. The beneficial aspects of higher learning in such circumstances are likely to be transmitted to all areas of the social strata.

The Universities can certainly contribute immensely if they are involved in the policies of National development. The fruits of Applied Sciences and research are to be made available towards the uplift of the conditions of the people. If the policies of trade, commerce and industry of the country which sustain the economy are related to the activities in Universities, the links between education and economic development can be established. It is an accepted proposition that the sustenance of high level manpower and research of highest order are possible only through the joint leadership of the State and the Universities. The policies of the Government and the policies of the Universities should therefore be properly turned to develop the social and economic pursuits of the people. As the management of programme of activities of such a dimension by the State cannot be fruitfully done, the involvement of the Universities for diversified system of education to produce the right type of manpower is inescapable. Quite a number of Private Sector Industries and Institutions like the Railways, Banks, Coal and Petroleum Industries and industries based on chemical and other natural resources, the Life Insurance Corporation have been nationalised. The demands for development of industries or the management of nationalised institutions have direct bearing on the linkage

of the University of the economy. The Universities which follow the set pattern of education or study or learning cannot survive if they do not orient themselves to make provisions for studies which would really interact with the programme of development. The interaction of industries, trade and commerce which forms the basic resources of the National development programme with the form of studies in Science, Applied Science, Technology and Humanities will no doubt create a new outlook and the aspiration of community development will be fulfilled. The study of welfare problems and the task of approaching the basic ideals of ultimate human welfare through National development will be accepted as a part of Universities' thinking.

The purpose and objective of higher learning in Universities and those of National development will thus be fused together, and the functions and responsibilities of Universities grow to such an extent that the thinking in isolation will no longer be possible.

The industrialisation of the country has given a jerk and a mobility to the Universities and their changing functions in national building activities will be a determinant of National development. The vast number of unemployed youth in the age group of 20 to 30 will have to be trained compulsorily in collaboration with the industries so as to ultimately create demands of a manpower full of technological skills. The Government and the University must think of a sort of deferred employment in respect of the huge number of undergraduates and graduates by engaging them in industries or other institutions on training. These training institutions will be run by the Universities and the industries jointly. These training establishments will be financed solely by Govt. through Extension Service Programme of Universities:

- (i) to provide training facilities for the vast number of educated unemployed persons;
- (ii) to reorient the pattern of higher education to match the requirements of manpower for the various industries: agriculture, transport, coal and chemical based industries, engineering services, trade and commerce, manufacturing technologies, food technology, etc;
- (iii) to develop research work on rural development problems to fit in with the way of life of rural people;
- (iv) to give incentive and access to talented persons from the poorer stratum of the society for creation of facilities for them.

Linkage with Environment

The importance of the forces in the environment and particularly the intensity of social, political and economic factors cannot be overlooked in any study of closer links of people's way of life with educational activities. The educational institutions have been playing an important role in the transformation of "way of life".

There are various factors such as parental occupation, domestic conditions, family circumstances, social status, conditions of poverty or affluence in

(Continued on page 270)

Linking Universities with Environment

—Issues relating to Internal Management & Structure

R. Bandyopadhyay*

In modern systems terminology, a university can be described as a purposeful system. A purposeful system's environment consists of all variables that can affect the state of the system. Viewed this way, a university's environment is the society at large and the university's links with the environment are parts of its systemic properties. These links are often implicit.

Environment influences the university, its product and its processes. Thus changes in the socio/political/economic environment affect the working of institutions of higher education. In the past, more often than not, educational institutions had reacted to environmental changes in a manner which was not conducive to its functioning. Often, adjustments were made in a poor way. Mismatch with the environment and dysfunctional consequences were the results.

Establishing explicit linkages with the environment will help us to adjust to environmental changes. With proper planning, we can even be in a position to influence the creation of the desirable environment.

Misreading the environment and failure to adjust may threaten the very existence of the university system. Thus, adapting with the environment through establishment of conscious linkages and responsive antennas is not only desirable but is the very essence of our future survival. The concern about forging linkages with the real world is, therefore, very justified and cannot be overstressed. But awareness and concern in themselves are not good enough for generating capabilities of adjustments in the system and of influencing the future environment. We require to initiate appropriate structural and managerial changes for the purpose.

In what follows, therefore, we shall discuss the nature of environment and types of experiments that are being made to forge effective links with the environment. The second part of the paper will then examine the basic structural changes and managerial processes needed for forging links with the environment on a sustained basis. In discussing the management and structural issues, stress will be laid in defining the appropriate criteria for the purpose.

Socio-Political Scene and Change in the Problem Environment

Based on British traditions, our universities were designed to cater to the limited needs of administration of an alien government. Structure of university administration, course contents, examination system and day-to-day logistics were all designed to

maintain and protect traditional learning system and an administrative and social system whose sole concern was preservation of status-quo.

With independence, the same trend continued, though there are new types of pressures. Firstly, there was pressure of numbers; more and more people wanted to enjoy the fruits of higher education. Science and technology and applied disciplines were on demand. Many universities and institutes of technology and regional colleges in engineering were established to meet these demands.

In spite of these welcome changes, the university system did not undergo any basic structural changes. We provided more of the same; traditional compartmentalisation of higher education in terms of various disciplines of study continued, though a number of new disciplines were added to the list.

Products of the university system were not quite alive to the growing and complex problems of a developing nation. The nation was struggling to leapfrog in the path of development. The problem environment was completely changed, but the university system failed to answer to the challenges posed. It could not adjust itself adequately with the changed problem environment. Many brilliant young men and women, who were the products of the educational system, found out-side the country better environment for their work and we had the familiar problem of brain drain.

When throughout the world, the boundaries of old disciplines were becoming less and less rigid and relevant, we continued practically unaffected by this change.

With the spread of systemic thinking, today it is being increasingly realised that real world problems cannot be compartmentalised in terms of disciplines. What we require today is to attack problems in an inter-disciplinary way.

Apart from this, need for shifting uni-disciplinary study and research to inter disciplinary study and research, we have also the need to make the system responsive to the needs of the community in general and rural communities in particular because they constitute the predominant part of our environment.

The purpose of training and educating young people should not only be to fill this or that function in the industrial and urban world or in the many facets of culture that we inherit, but it should be to equip them to play an active role in influencing the life of the community and in solving the problems of the society.

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More specifically to forge effective links with the environment, we must attempt the following:

- (i) Problems in the urban and industrial world have to be studied and understood. Problem areas where universities can and should play a role in effective solution are to be identified. Courses should be designed to fulfil this need and adequate measures have to be taken to expose students and faculty to real-world problem situations. This would generate the necessary skill, confidence and expertise not only in tackling problems of today but also in tackling similar problems of the future.
- (ii) Problems of socio-economic development have to be understood. This will call for understanding rural environment. Appropriate steps have to be taken to innovate educational and research programmes in the rural environment. Such programmes should enable the university system to act as vehicle of change and progress in the rural area.

We shall further elaborate these ideas.

Linkage with Urban/Industrial World

In respect of forging links with urban and industrial world, we need to develop a university educational system that encourages continuing education, and integrate university educational system with post entry training systems of various organisations. Today, very little connections exist either with the university system and the professional world or with the universities and training system of industrial or corporate organisations. Students, therefore, after graduation often had to be retrained by the industry and sometimes had to unlearn what they had learnt in the university.

Linkage with the Rural Environment

The educational system that does not transform our countryside and that does not bring the winds of progress and change there, is not going to be found to be relevant in the long run.

It is, therefore, essential that university system becomes an active partner in the process of integrated rural development.

In all programmes of integrated rural development, faculty, students and members of rural community should work together towards spread of adult literacy, spread of scientific knowledge and outlook and solving local problems of development through innovative applications of science and technology. Thus, the group should work on evolution of rural technology, which is dependent on local material and which fulfils the local needs. Faculty and students of the university system should ensure generation of adequate skills and expertise to utilise the technology so evolved.

Such programmes have been launched by a few selected institutes in the country but a real thrust in this direction has yet to take place. Perhaps it will not be out of place to very briefly mention some of the experiments undertaken by the Birla Institute of Technology & Science in forging links both with industrial world and the rural communities.

Some Experiments

With a view to forge links with real world and to make education more relevant and practice-oriented, the Birla Institute of Technology & Science, Pilani, launched 'Practice School Programme'.

The programme which was initially launched with a degree of caution, has turned out very successful. Today all final year students of all disciplines opt for Practice School Programme. Through the Practice School Programme, a vast infrastructure has been established, which acts as an effective meeting ground between the university and the real world. In addition to giving students and faculty opportunities to test their knowledge and application through real-world problem solving and thereby learning and enhancing their professional skill, expertise and prestige, the programme has made it possible for the Institute to marshal its men and material resources so as to link its research directions with the needs and demands of the environment.

Similarly, in respect of rural development, the Institute has taken the case of development of Dhandar Village through its practice school programme. Other programmes of integrated rural development have been launched in collaboration with commercial banks operating in the area. A number of research programmes to develop relevant technology for the community consistent with the needs and available local materials have been also undertaken.

Further efforts are being made to integrate educational system of the university with the post-entry training system of industry through collaborative education programme. In such a programme, a setting is provided where practice and theory can freely exchange notes; such course offerings enable the desirous people from the concerned host organisations to pursue higher education without undue demands on their professional obligations particularly in terms of time. For all this to be feasible, the structure of the post-graduate programmes must be made flexible enough so as to have an admission policy with multiple-entry points, making possible case-by-case consideration of applicants' professional experience.

Specifically with a view to reorient students and professionals to rural development, not so much as a matter of fulfilling obligation but as a matter of professional accomplishments and academic accomplishments, collaborative programmes leading to M.E. degree in 'Industrial Planning and Area Development' have been designed and are likely to be launched in collaboration with commercial banks, National Institute of Bank Management and other term-lending financial institutions. The course is multi-disciplinary in nature and would comprise subjects like development processes, system analysis, resource use planning, infrastructural engineering, project management, development administration and planning.

Such programmes will be more learner-oriented than faculty directed. Stress will be more on self-learning process. Group discussion, seminars, field-

level work will be the salient features of such a programme.

Many other institutes and universities are also making efforts in their own way to forge links with environment.

However, whatever efforts we are initiating now to establish links with both rural and urban world will not be self-sustaining, unless we suitably modify structure of our organisation and reorient our managerial processes within the university. In our enthusiasm to do novel experiments, often we may forget about costs and structural changes necessary for continuing success of the programme. Often, we can make a programme successful in a limited scale through considerable expenditure of time, money and effort. We often suffer from creating model programmes which are not easily replicable. For the benefit of the community at large replicability should be an important criteria in design and selection of development programmes.

Further, students and faculty participating in the programme should have a sense of professional pride in undertaking the programme. All these require basic structural and attitudinal changes within the university system.

Structural and Internal Management Issues

We have sketched very briefly the various needs to forge links with the environment. To make such efforts successful, we have to examine whether present organisational structures of universities are adequate. It may be seen that most universities in our country are organised in hierarchical pattern with rigid boundaries among various departments. This helps in piecemeal specialisation completely divorced from reality.

Real-life problems are multi-disciplinary. Can uni-disciplinary departmental structure be suited for tackling multi-disciplinary problems? Further, today research programmes are more theoretically oriented; these are not linked with the practical problems of real world. If our undergraduate programmes are linked with real world, can we have post-graduate and research programmes planned in isolation? Will these two arrangements not create conflict and ultimately become dysfunctional?

Structure and the managerial processes of today are resistant to change. Without effective measures to remove these barriers, will our efforts to change academic programmes be fruitful? To answer all these questions, we must go into the criteria problem of organisational effectiveness.

Organisational Effectiveness

Organisational effectiveness is to be measured by its performance in relation to its goals. Goals and missions that a purposeful system wants to achieve determine to a large extent its internal structure and managerial processes. According to modern theories of organisational design the following criteria are relevant in designing structures and processes in an organisations:

(a) Steady state efficiency criterion:—This en-

ures that every logistic and managerial function is performed optimally but it does not ensure capability of the organisation to adjust to changes in environment.

(b) Operative responsiveness criterion:—This ensures the capability of the organisation to cope with change in volume, to cope with more numbers where the course design and programme do not change.

(c) Strategic responsiveness criterion:—This ensures that along with change of volume, if nature of functions changes, the organisation is able to effect strategic adjustments to appropriately cope with such changes. Our universities have not generated adequate capabilities for strategic changes. Here changes in present structures and processes are called for.

(d) Structural responsiveness criterion:—This criterion demands that organisation should be self-adaptive with changes in environment.

These four criteria have to be supplemented by criteria of economic and human resource feasibility before any structural changes can be adopted finally.

Changes in Structural and Managerial Processes

As we have examined before, the objectives of our higher educational organisations are multi-dimensional. Further, these are multi-level in character. To effectively achieve the fulfilment of our missions as per criteria spelt out above, it is essential that the following changes are effected:

(i) All structural barriers for multi-disciplinary work are abolished, through a newly-designed structure.

(ii) Research and teaching activities are integrated with problem solving in the real world.

(iii) Excellence of academic work, high efficiency in imparting skill and professional expertise to students must be preserved while effecting changes.

The following structural and related changes are likely to accomplish the above objectives:

(a) Grouping of university activities and functions cutting across disciplines.

(b) Providing adequate mechanisms for faculty and student participation in all activities. This can be adequately accomplished by installing suitable system of planning within the organisation.

(c) Ph.D. and Master level research topics are to be spun out from the problems of the real world. There is no reason to believe that such problems would be academically less challenging.

(d) Integrating the university with the professional and practising world through schemes of joint research and joint teaching programmes. The university structure should be flexible enough to make this possible.

For all these, adequate integrated working at all levels of the university organisation is needed. Here integration should not be confused with bureaucratic centralisation. Responsibility should generally be devolved as close to the point of action as possible.

Instead of various standing committees which is the normal feature of university organisations we should have groups formed around tasks. These groups will be inter-disciplinary because of the very nature of the task itself.

Within a loose functional structure, we should experiment on matrix organisation and so give up the dysfunctional aspects of present hierarchical structures.

One or two universities have redesigned the structure to suit the needs of the tasks to be accomplished. The Birla Institute of Technology and Science has redesigned the structure on functional basis and to a limited extent experiments on matrix form organisation grouped around tasks are also being tried. The results are really encouraging.

My experiences with design exercises for organisations here and abroad suggest that organising departmental structures and other supporting systems on the basis of traditional disciplines result in wasteful mismatch of people and laboratory and other facilities. With changes in emphasis on specific subjects, new laboratories are built up, new people are recruited but seldom, existing facilities are modified and existing people re-trained to fit with the changed situation. Each departmental head, and laboratory-in-charge, develop attitudes of empire building. However, when demands shrink, facilities are unutilised or underutilised; the people are not allocated elsewhere. The entire process is structurally rigid and very costly in terms of human, material and financial resources.

With suitable structural adjustments, re-training methods and creation of institute-wide pool of supporting staff, these wasteful practices can be cut down to the minimum and unit cost of operation of the university can be reduced effectively. To maintain excellence, we should have concern about students' performance in their academic efforts. Regular feedback and counselling system should be an integral part of the redesigned structure. Such a structure, therefore, will ensure evaluation of courses on a continuous basis. This will also help in developing new or redesigning old courses and experimenting with teaching methods.

The flexible structure proposed here will encourage integration of field level practical knowledge with research results and will create new knowledge. Thus, a continuous creation of new knowledge and its dissemination in the classroom and in actual application will take place. A university thereby becomes a centre of innovation and new knowledge.

It may be seen that the brief structural changes suggested here satisfy the four criteria mentioned above. However, the structural changes must be supported through appropriate information system and planning and budgeting system. Apart from students' records and administrative data universities seldom have designed appropriate information system for decision-making and implementation.

We very strongly felt that for the new tasks that the university has to perform, participative management is a necessary condition for success. Information system here has to be used as the underpinning

mechanism for the effective functioning of purposeful participative management. The information system developed within the university performs the following functions:

- (i) It keeps all participants informed in the various activities of the organisation regarding the progress of these activities and programmes.
- (ii) Abstracts from the experience of the real world and students' feedback information. Provides inputs for modifying courses, re-designing course materials, preparing textbooks to bring the flavour of the real world in the classroom situation.
- (iii) Performs the integrating function along various levels through dissemination of relevant information.
- (iv) Policy-making, planning, programming and budgeting is improved in view of a better information base. It is to be understood these processes are not only financial (this result in the improvement of the present budgeting process which is basically a financial allocation process).

Conclusions

We have advocated (a) structural changes, (b) installation of planning system, and (c) installation of appropriate information system to cope with the everchanging problems of linkage with environment.

Each institute has its own problems in these areas. Specific solutions cannot be suggested without looking into the organisations in detail. Each organisation should create its own team to examine these issues. Competence to do this type of examinations exists in most of our universities.

In conclusion, it is necessary to emphasise that these changes need not be costlier. In fact, experience suggests such processes of linkage may generate external finance for Ph.D. and Master level programmes. Laboratory material cost may be suitably reduced. All wasteful costs are reduced through planning and better implementation and, as such, the changes suggested above are not only desirable from the point of view of relevance but may be essential for reducing the excessively high cost of higher education.

It is felt that to be effective, a university must innovate continuously. New ideas are to be generated and experimented upon. This calls for dynamic leadership at all levels of university administration and academic tiers. Above all, the Vice-Chancellor, besides being an accomplished leader of his academic colleagues, has to become a successful entrepreneur willing to take risks in trying new ideas and breaking new grounds continuously.

A dynamic leader, a dedicated team of professionals supported by an organisation structure and management processes which are strategically and structurally responsive will go a long way towards making a university an effective instrument in solving problems of the society. □

Economics of Higher Education —A BITS Experience

V. Krishnamurthy*

The rising cost of higher education is a world-wide phenomenon. But in this country we have stumbled into a policy of charging that rise to the public account rather than the individual one. The ever-growing tendency to subsidise higher education so that the cost to the individual is minimal has never been resisted. And in this milieu it is rare that we see a privately endowed university surviving the onslaught of the rising cost. A university which has no easy access to government funds or resources ultimately succumbs to one of the two temptations—one, to close one's eyes to pursuit of excellence and the other to surrender to the politicalised will of the government machinery by towing behind as one among many. This article will attempt to share the experiences of one privately endowed university namely Birla Institute of Technology & Science (BITS)—experiences wherein starting from educational and academic considerations it appears that a technique of academic structuring and organisation has been discovered and evolved and as a byproduct it appears the running cost has been lowered. We often hear excellence is directly proportional to the money input. On the other hand, we also know the national policy that in all future allocation of budget for education, the largest share will go only to primary and adult education—which is, as it should be. As an institution supported by private funds only, the limited availability of resources coupled with a growing ambition to strike a novel path has prompted BITS to look back on its own educational programmes from a financial point of view. This article is the result of such an analysis. However, it does not presume that the path traced by BITS or the solutions arrived at by BITS are unique in any sense. Whether the answers are lasting answers to the question of economy is not known. But on introspection it is recognised that wherever an idea or a hardware was borrowed the corresponding implementation of the idea or the software was evolved indigenously and certainly at a lower cost than it would otherwise have been if it had also been transplanted from an alien situation. On macroscopic comparison with prestigious institutions like IITs the achievements do not rank lower especially in terms of the graduates of BITS grabbing the good jobs that are available.

First let us briefly take note of what has been done on the educational side. 15 years ago BITS rose from the position of a conglomerate of three postgraduate affiliated colleges to the position of a deemed university. Instead of choosing to proceed on a beaten track it struck for itself a path of innovation since then. The very first reform that it undertook was on the examination system and one of its first decisions was to switch over to the semester system and complete internal evaluation at all levels. Coursewise completion of an academic programme became a normal process in the Institute in a very few years. Since 1970 it has also adopted a qualitative letter grading system with continuous evaluation during the semester. The unit system of courses was also introduced in 1970-71. The academic regulations which bind the student and the teacher to operate this system have since been written in such a way that both the teacher and the student know their different responsibilities. A number of checks and balances were built into the regulations. For example, every examination paper including those of the final comprehensive examination at the end of the semester would be made accessible to the student for complete inspection. In addition the maintenance of minimum academic standards is monitored by a committee of students and staff called the Academic Counselling Board. This has the sanction of the Senate behind it. This Board monitors the performance of every student, picks up those students who need advice and correction and has also the power to punish continued poor performance.

On the side of the content of education BITS has evolved through the decade a structure now commonly known as the five-year integrated programme and as a super-structure over it the two-year interdisciplinary Master's programmes. The first degree is for a normal period of five-years. During the first three years of this programme an assigned sequence of foundation courses are insisted for every discipline. The foundation is designed to be broad-based to the extent that a good base on science, mathematics, technical arts and humanities is built in every programme. This is followed by an intense specialisation in the later years where again the specialisation is properly linked to the peripheral and allied areas of the major discipline.

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The fact that an analytical foundation is common to almost all the programmes has paid rich dividends in the form of integration of attitudes to education both on behalf of faculty as well as on behalf of students. Further the commonness at the base and need to bifurcate into different disciplines only at the higher levels, coupled with the provision of various kinds of electives has paid the other dividend of the availability of a variety of courses for the students to choose from or be exposed to.

This is only one of the flexibilities inherent in the structure. There is a large amount of structural flexibility in its programmes for both lateral and vertical movement of students. A student can move at his own pace consistent with his abilities and ambitions. He can transfer to a specialisation on the strength of a more direct experience at a maturer age, which is nearer graduation, without wholly depending on hearsay disciplines of the glories of a particular discipline. An outstanding student can concurrently work for two degrees and finish both in a comparatively shorter time than would be required if they were done in sequence. It is possible for him to re-enter the professional interdisciplinary programmes even after completing only the science and economics programmes etc. Every student is trained in decision making through a freedom, coupled with a responsibility, to choose his own study load, selection of his own timetable picking of electives to suit his multifaceted aspirations and preferences. Incidentally, this tradition of flexibilities has now opened up for the Institute an unusual and ingenious answer for accommodating the 10+2 school system. The factors of uncertainty that are imbedded in the operation of the 10+2 by the nation are now sought to be taken account of, as far as future students of BITS are concerned, by the device of a preparatory year at BITS, within which acceleration and deceleration could take place, as per the needs and capabilities of the individual student.

A major innovation along with the above, never attempted in any of the universities in spite of the consensus of thinking at levels of policy making, is the formulation of the concept of internship as a process of education, not only in fields of engineering but even in fields of science and social sciences, and the implementation of this idea by means of a largely organised network of practice stations in centres outside Pilani like, Bombay, Calcutta, Nagda, Renukoot, Chandigarh, Hyderabad and Delhi. By this scheme the students spend two summers and a semester—all within the five years of the duration of the programme—at a place outside Pilani under the continued and direct supervision of BITS faculty, resident at that place. The organisations are either a producing industry or a Bank or a National Laboratory or a Consulting concern. In consultation with these organisations problems which are of interest to them are formulated and the students working for BITS practice school degree work on projects connected with these problems and are graded by the resident BITS faculty. This component of the academic programmes of BITS has

brought in a reality and motivation in the various programmes at BITS of such a kind never before perceived in an otherwise class-room-oriented narrative type of bookish education.

All these involved focussing attention on important aspects of educational growth rather than budget growth. Certainly the growth of the budget must necessarily come into the picture because of inflation and other ambitions but development cannot wait if there is a rigid limit on monetary sanctions. Ingenuity had to work how to cut-down the cost and how to utilise optimally the budget sanction. It is difficult to quantitatively consider every aspect of development. The only rough mathematical model that one can think of is the concept of a utility function which depends on many parameters. In our context the parameters are: the number of students, the number of programmes (leading to degrees) the number of staff, the number of alternative courses for each programme, the number of supporting staff, the size of the campus etc. etc. These can certainly be quantified but the value of the utility function has yet no way of being quantified. In any assessment of this value, other parameters that enter are: the academic flexibilities at the time of admission, the practice school component, the effect of interdisciplinary thoughts in all the programmes, the impact of the input of academic people into administration which brings in the academic point of view in decision making etc. etc. So in the mathematical model the utility function could be very complicated. It is only possible to consider how much utility is realised against the input changes, if any, over the years. The input in all the parameters indicated above has been a fixed one except for the routine budgetary increase. When we therefore look at either the economics of BITS education or the cost benefit ratio of the BITS experience, it is necessary to have this qualitative framework in the background.

The restructuring of the curriculum was effected in 1971. The earlier history is that there were tailor-made courses of the same subjects for different disciplines even though the same set of teachers were teaching these courses which were all alike for most practical purposes. The concept of integration of these courses was thus born. If a student needs to know, let us say, a certain amount of physics for a programme in a discipline, whatever discipline it may be, why should we discriminate the students in the nature of handling the physics courses? The basic amount of physics that would be needed at the foundation for any discipline should not be much different in degree though it could be different in terms of quantum. The effort was made at BITS to identify what commonality existed in these physics courses and similarly in each of the other discipline courses for all the disciplines and offer these common courses for all these students by merging them for purposes of these courses. This process of merging marginally different courses took the BITS faculty more than a year to achieve. Finally, we ended up by having deleted from the programmes about 200 courses

which were superfluous from a grand total of about 600 courses. Their parallel running was just uneconomical.

A little digression is worthwhile. The author remembers as a Chairman of a UGC Visiting committee visiting a well-known university wherein they pleaded for sanction of faculty members in statistics in three different departments to teach the same type of undergraduate statistics material (mostly qualitative), each one catering to an insignificant size of students. In spite of the fact that the three departments were geographically very contiguously situated, their request to have three different faculty members only indicated that no attempt was ever made to coordinate, integrate and economise on faculty usage, much less optimise the existing facilities. These questions of economy perhaps were never asked because our national tradition goes back to the feudal system of a university structure wherein each department head was supposed to build around himself a sphere of influence—the so-called centres of excellence around persons of recognised merit. After having imitated this alien model for more than a century, our country in spite of its independence has not reconciled its objectives to the needs of a developing nation nor has it cared frankly to question the objectives of its educational system.

At BITS therefore it was possible, after the above mentioned, though tortuous efforts to achieve the present practice wherein teachers in different disciplines can team up to teach an interdisciplinary course like thermodynamics, material science or operations research or comparative Indian literature—all at the common core of the programmes. You would not see in BITS today the spectacle of statistics for economics being taught for ten students by a mathematics teacher and simultaneously statistics for biologists being taught by another mathematics teacher for another 20 students! These are only a few of the many economies that were arrived at by educational integration. Another aspect of optimal course offering is the conscious effort put in to avoid vertical duplications. By this is meant that a course at higher level depending on lower courses should be sufficiently intense and should not spend class time by duplication of material. These and similar efforts across the institute brought forth an optimum number of courses that are being offered in the institute.

The attitude of BITS to educational hardware has the same orientation. The requirement of equipment in various disciplines are very often common and usually considerable duplication takes place. To get a consolidated view of available equipment at various places in the Institute, a comprehensive and classified 300-page inventory of the equipment, its specifications, present status of working, etc. across the entire institute was prepared. This enables BITS to centrally identify equipment needed by the various educational and research activities. And when the equipment is finally decided to be purchased, it is done with the expertise available in the Division of Educational

Hardware—which specializes in a thorough knowledge of the supply in the market, specifications, maintenance problems and rules and regulations governing purchase in India and abroad.

The use of educational hardware is put to the same test. A prestigious equipment, say the computer, has to be fully used. Every University certainly subscribes to this statement but BITS means by this statement more than the obvious. In addition to the requirement that the computer is not to lie idle, BITS also sees to it that every student (irrespective of his final destination in terms of graduation) has an access to the computer and has the necessary capabilities. The impact of computer programming and the use of computers in data processing being what it is in the modern world, BITS does not believe in compartmentalising undergraduate education by replicating the fine structure of advanced science or technology at the lower levels. BITS does not therefore deny the use of computers or for that matter the doors of any prestigious equipment, to any student, just because he belongs or does not belong to, such and such discipline.

In terms of the economics of education the Practice School method of education has made a breakthrough. The integrated approach of linking education at the university world and developmental research in the outside world has enabled the professional world to use talented youngsters for furthering developmental type of activity without long term financial commitments. This link has proved to be a deliberate design for the survival of the university system. In the past seven years whatever has been done through the Practice School has been achieved without any significant increase in the budget. The additional direct cost of the institute has mostly been shared by the organisation which host the Practice School—organisations both on the private sector (not necessarily belonging to the sponsors of the Institute) and the public sector.

The Practice School system of education has now led BITS in a natural way to face the problem of postgraduate engineering education. The originally conceived high standards are eluding even the prestigious institutions mainly because the best outputs from the undergraduate programmes are not attracted to the M.E. or M.Tech., in spite of the 100 per cent scholarships. After an intense dialogue with major employer groups, BITS has discovered that there is scope for training students on multi-disciplinary function oriented tasks rather than merely add more 'advanced' courses in the same discipline. The sponsoring organisations have good reasons to support such programmes, because it serves a two-fold need, viz. (i) future manpower development for well defined professional functions and (ii) the paraphernalia of operating this programme at the site of the organizations provides an opportunity for inhouse training of the personnel of their own organizations. So it has been possible for these organisations to come forward to pay for the scholarships to the students of these programmes and also provides

physical facilities. These programmes are proposed to be started by BITS in July 1979.

To avoid the risk of this article being ignored because of its length, we shall not elaborate on many other facets of BITS activity. We shall only list a few of them here. For best utilization of men, material and finances, the choice of research areas are made in terms of relevance priorities to be tackled by multidisciplinary group of workers. The infrastructure needed for the entire flexible system is manned as much by teaching staff as by non-teaching staff. The academic perspective that has to be injected into the day-to-day implementation of the integrated education is being contributed by involvement of the teaching staff (and the students also) in much of the analysis and decision making at the infrastructure level. The ratio of teaching staff to non-teaching staff to Class IV staff is around 1:1:1 at BITS. The entire administrative activities and functions are grouped together under ten Divisions which deal with ten broadly classified distinct functions of the institute as a whole. For instance, the entire work of classroom instruction of the institute is being centrally planned, formulated, executed and monitored by the Instruction Division with experts drawn from the various disciplines, and therefore avoids the confrontation and parallel operation of conflicting ambitions centred around localised interests. Each teacher discharges several functions

and for each type of function he is controlled by a different Division. So at most only ten Divisions have to coordinate and there are no conflicting interests among the ten Divisions, since each has a distinct function and responsibility for the whole institute.

In summary it is to be noted that in spite of the fact that BITS is sponsored by one of the richest industrial houses in the country, it does not have the luxury of linear growth of financial resources. But looking back on its own educational growth, it is able to see a pattern that is emerging. It appears that the limitations of physical, human and financial resources was the paramount fountainhead of the machinery of change. BITS has now developed perspective on costs which is interlinked with the concept of integrated education. Many myths conventionally held sacred by the educational world have been proven to be invalid. It is not true, for instance, to say that in order to innovate, money input is a must. The scheme of dual degree system in the Institute which is a product of the flexibilities inherent in the structure is a standing example of how the limited availability of resources gives dividends both on the academic side and on the unit cost of education. Every facet of activity on which the Institutes has given an innovative thrust will continue to be sustained in view of its favourable impact on the economics of the operation of education. □

Universities and National Development

(Continued from page 262)

surroundings, heredity, opportunities of education, associations etc. which are relevant to the pattern of social thinking and educational activities.

It is well-known that the influence of surroundings in the early stages of a man's life has a great impact. It is not, however, always possible to calculate the degree of influence of the environmental factors. This is more so because of the attitude of opinion of persons which is bound to differ in different strata of social condition of life.

The linkage with the environment is, therefore, not an easy task. Professor Albert Einstein had difficulties in his childhood due to the environmental factors which did not respond to his mind. He was quite shy and was seldom accepted in the games of

his fellows. He detested the formal, regimented methods of education. He had to leave the German School to join the Polytechnic Academy of Zurich, Switzerland. He found a social atmosphere there and the freedom to devote himself to his beloved Mathematics and Physics. This instance is cited just to establish that the type of problems which the academic institutions and the students face makes the question of linkage of the educational system with the environment more important. There are thousand and one variety of mind and body which participate in academic institutions. The environmental factors play a dominant role in shaping the life of students. There is, therefore, a strong case for linking certain common areas of thinking in the social order, however different such social, religious, humanistic, political or economic thinking might be. The Universities should, therefore, set down the principles of such linkage with environment. □

Cost of Higher Education

[Contributed by the University of Burdwan]

In a developing economy the supply of highly educated people is abundantly required to maintain the continuity of social and economic development. It is, therefore, an accepted proposition that the education is the capital resource of a modern industrial society. There are countries which spend more money on education than on defence. The reasons are quite simple. The educational revolution is bound to create productive factors in a developing society and the cost is no question. The argument that the education has become costly does not hold water and the thinking that higher education should not be extended any more is harmful particularly in a developing economy.

The level of University enrolment during the last decade will show what proportion of students are going in for higher education.

Growth of students enrolment

(1960-61 & 1976-77)

	1960-61	1976-77
Total enrolment	5,56,559	24,31,563

(Appendix IV of UGC Report for 1976-77)

Growth of Colleges

1973-74 1976-77

Total number of colleges	4,308	4,569
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(Appendix V of UGC Report for 1976-77)

Student Enrolment (Stagewise)

Stage	1974-75	1976-77
Graduate	20,75,039	21,41,542
Post-graduate	2,34,114	2,18,128
Research	17,977	21,910
Diploma/Certificate	39,411	49,983

(Appendix VII of UGC Report for 1976-77)

The break-up figures of stagewise enrolment in Universities and Colleges

Stage	University Departments	University Colleges	Affiliated Colleges	Total
Graduate	1,28,245	93,165	19,20,132	21,41,542
Post-graduate	97,124	4,253	1,16,751	2,18,128
Research	19,267	201	2,442	21,910
Diploma/Certificate	20,435	200	29,348	49,983

(Appendix VIII of UGC Report for 1976-77)

The total expenditure during the three years 1974-75 to 1976-77 on plan Projects was :

Year	Rs. in lakhs
1974-75	2491
1975-76	2848
1976-77	3850

Including the Non-plan expenditure during all these three years, the total expenditure was :

Year	Rs. in lakhs
1974-75	4681
1975-76	5830
1976-77	7119

(These figures however did not include the grants to Central Universities).

In addition to the expenditure incurred by the University Grants Commission on development of Universities, the State Governments also spent considerable amount towards the Development of Universities and also for Non-plan Projects.

These figures are just cited to show what resources were spent towards the higher education.

It is well-known that education is not to be regarded as consumption. It is an investment as well. It is not always possible to formulate the relationship between education and economic growth. The contribution of education in building up human resources is to be analysed. It is a matter of public policy, no doubt, how the price of higher education will be related to the social structure. But in any case, the form of education which is being attempted at different levels will be definitely expensive. But this does not mean that higher education which is expensive and is likely to become more so as a result of advancement in Science and Technology, should be restricted. The basic aspect of investment in education should be borne in mind in assessing the cost factors of education.

In our country there is perhaps no lavish system of education. The demand for more education at the lower, middle and higher levels of studies resulted in the growth of spending larger amount on education. A comparative study of the international level will show that the educational expenditure in India still lags much behind the progressive countries. The benefit side of this investment on education is, no doubt, important, but there are no reliable statistical tools available to calculate the rate of return from such investment.

In so large a system of education which is closely related to economic, social, cultural and political affairs, there is bound to be difference of opinion as to the nature and quantum of investment or proportion of investment of the resources of the nation on education. The cost analysis of such an education perhaps leads us nowhere. There is a link between economic growth and education, and in a democratic society the factors of cost or public expenditure on education which may sometimes be disproportionately high should not prevent educational investment, particularly on higher education despite the great need for diversification of expenditure towards primary and other forms of mass education. The expansion of higher education will ultimately benefit all social classes although there may be in the initial stages some educational advantages for the more or higher educated people. This will gradually disappear and the impact of higher education will be felt in every strata of the society. In a developing society therefore, the educational system must increase in a rapid way and factors of cost or output as a consequence of such cost, however related those may be, should not stand in the way of development of higher education.

The institutions of higher education should be expanded to play a definite role in the economy irrespective of the expenditure implications. □

New M. E. (Collaborative) and M. Phil. degrees at BITS

BITS has introduced from July 1979 two-year higher degrees beyond the integrated first degree leading to M.Phil. and M.E. (Collaborative). There are in addition to the M.E. degree in various engineering disciplines and M.Pharm. which the Institute has been having.

The M.E. (Collaborative) are in the three branches of—Project Engineering, Industrial Production and Industrial Development. The desired qualification is any integrated first degree of BITS or its equivalent provided certain specific analytical and application oriented courses have been done in that degree. These programmes will be run at the practice school stations in collaboration with industries at Calcutta, Delhi, Bombay and Nagda who have offered facilities for running the programme. The teaching will

study components but also will be given tasks related to the course throughout the year at the organisations. The second year is devoted to internship at the organisations where they will be placed under senior personnel of these organisations who will be guiding and evaluating them.

The M.Phil. programme which is also of two-year duration acts as a bridge between the first degree programmes and Ph.D programmes. The first year is devoted to course work, teaching practice and the second year for thesis/project and seminar. The courses have components called 'basic courses' which attempt to integrate knowledge and give an overview of disciplines as also discuss selected latest advances. The other component of course work called the 'optional group' provide a package of courses in

Madras, Professor P. Sivalingam Vice-Chancellor of the Paraginar Anna University of Technology, announced that a postgraduate course in photogrammetry and remote sensing will be introduced in the university from the next academic session. The university would train junior officers from the various state government departments and surveyors for a diploma. The university was doing a pioneering work in the field of survey education. Prof. Sivalingam called for a closer collaboration and support from the Centre for Surveying Training and Map Production and National Remote Sensing Agency.

Wing Commander K. R. Rao, Director of National Remote Sensing Agency, Hyderabad, said in his inaugural address that modern photogrammetry instruments were highly sophisticated and performed a variety of tasks. These could be used in preserving ancient monuments and the monuments hit by natural calamities. He said that the maps available in the country were over three decades old which were not found useful to the people.

An automatic cartography process should be developed as proper studies in the field had not been carried out for quite a long time. Maps could be taped and stored in data banks through automatic processes.

Prof. M. Sadasivam welcomed the delegates and Prof. W.P. Vijayaraghavan, Principal, of the college released the working papers.

Gauhati Varsity organises seminar on adult education

Gauhati University organised recently a three-day seminar to discuss the problems relating to operation of National Adult Education Programmes. Dr V. Venkata Rao, Professor Emeritus who inaugurated the seminar suggested the expansion of educational activities for the rural women. Who should get priority at all stages? He observed that tribal women of north eastern region were in an advantageous position in the field of education as compared to women of other states.

Dr. H.K. Baruah, Vice-Chancel-

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also be undertaken by BITS faculty as well as professional experts in the organisation.

It may be noted that the above are function oriented branches and not merely discipline oriented branches.

The dominant theme of the three M.E. (Collaborative) programmes attempts to combine theory with practice in the setting of a professional organisation. The entire two-year period of study is to be spent under the general supervision of Institute faculty and of scientists and engineers of these organisations. The challenge and rigour of these programmes are intended to demand what is best of university system along with what is best in the professional world.

The first year will be devoted to course work which will follow the method of discussions and seminars. The student is expected to not only contribute a self

depth in various specialisation in disciplines as also in areas of research like Solar Energy, Waste Disposal etc. which are on-going research activities at BITS. M.Phil. programme does provide scope for professional development in teaching and research and also as a take off point for Ph.D. research.

All these two-year degrees have a provision for a candidate at the end of the first year to take the Ph.D. qualifying examination and if successful enter directly the Ph.D. programme by giving up his two-year higher degree and telescope into the Ph.D. programme.

Anna Varsity introduces photogrammetry course

Presiding over the inaugural session of the advanced summer school on 'sophisticated surveys and photogrammetry practices' at the Guindy Engineering College,

ior of the University presided over the inaugural function and stressed the urgency of application of knowledge for solution of problems of rural women.

Dr. Sushila Mehta of the National Adult Education Programme said that it was a matter of regret that eighty per cent country's women remained illiterate even after thirty years of independence. The seminar sought to create an awareness leading to the change in attitude in the society. She appealed to the participants to see how education could be related to solve women's problems.

Dr. (Mrs.) Renu Devi, Director of the seminar said the aim of the seminar was to focus attention on the problems of women education in the country and to generate a climate of opinion in favour of laying a sound foundation.

The seminar recommended setting up of a separate department for women education in Assam. Community complexes in rural areas to attract women for adult education programmes were suggested. Resource centres should be established preferably at the university for production of reading material and training of functionaries of NAEP.

Panjab Varsity College Development Council

The Panjab University has set up a College Development Council for a proper and integrated development of its colleges. The thirty-member College Development Council will be headed by the Vice-Chancellor, Prof. R.C. Paul who said recently in Chandigarh that the Council will serve as a vital link between the University Grants Commission, the university, the colleges and the state government. It will advise the university on all matters relating to development of affiliated colleges. One of the functions of the Council will be to ensure that the grants released to the university for disbursement to colleges were used properly. The Council will look into the problems of colleges which cannot make use of the grant released by the UGC in the absence of a matching grant. Improvements in the various aspects of

examination reforms, restructuring of courses, especially the college science improvement programme will be suggested by the council. The Council will examine and recommend the proposals for grant of autonomous status to the colleges.

Mrs. J. K. Grewal, the Dean of the Council suggested that the grants should be linked with the needs of the colleges and not with numbers.

Seminar on art of the novel

Addressing the seminar on 'Art of the Novel' organised recently in Patna by the Department of English, Patna University, Dr. Vinayak Purohit of the Sociology Department of Bombay University said that most of the literature written in different languages recognised by the Indian Constitution was regional and provincial in character. Dr. Purohit said that the author could not transcend beyond his society and his times. It is only when a world order has been established for several decades that we will be able to pass from what Marx called the pre-history of human society to the history dealing with man proper. The true regionalist novel makes its appearance when the bourgeois writer while still relying upon naturalism deliberately chooses to limit his vision to circumscribe his outlook and to pretend that he really knows only a small area. The positive gains of the regional novel include the highlighting of fairs, the festivals, the customs and traditions of the locale and the nuances of the dialect of the area.

Dr. M. Bose of the Calutta University outlined the image of women as reflected in the works of three novelists from three literatures, viz. English, French and Bengali. He contended that the imposition of an inferior status upon women was the cause of violent upheavals in the world of the family and often resulted in a re-alignment of power. The social content of the novels was the ideal of freedom from tyranny.

The seminar was sponsored by the University Grants Commis-

sion and attended by the faculty from the various Indian universities.

Integrated development of technical education proposed

The Estimates Committee of the Lok Sabha in its fortieth report has suggested that a single agency should be set up for development of technical education in the country. The Committee was not in favour of two agencies, the University Grants Commission and the All India Council for Technical Education looking after the progress of technical education. The report reiterated the earlier recommendation that meaningful practical training should be imparted to engineering students at the undergraduate level. It suggested that candidates considered for faculty positions should have a certain minimum industrial experience.

Osmania Varsity convocation

Prof. Malcolm S. Adiseshiah, M.P. and former Vice-Chancellor of Madras University delivered the 58th convocation address at the Osmania University recently. He said that higher education in the country was facing a crisis and was the legacy of the older generation to the younger generation. He called upon the universities and colleges to formulate a code of conduct prescribing the service conditions of teaching and non-teaching staff. The managements of colleges and universities should implement the recommendations of the University Grants Commission on syllabi, examination reform, linking learning to social problems and develop cultural and sports facets. Prof. Adiseshiah advocated the abolition of grade system and suggested its substitution with the record of what a student and his teachers attempted and accomplished in learning and research. He stressed the need for breaking the inequitable link between university certification and gainful employment. The educated should repay their debt to the community, since the poverty stricken society had invested a huge sum

with a recurring outlay on higher education. He appealed to the younger generation to use their inventive capacity to tackle the un-employment problem. The organised sector consisting of a small percentage of labour force with its diminishing job opportunities could not solve the problem alone. He emphasized the need for making available the capital and raw material for the economically weaker section. The training and managerial competence should also be provided to them to ensure coexistence between the large and small sectors. Prof. Adiseshiah called for organising the masses to produce the basic consumer goods as advocated by Mahatma Gandhi. The younger generation should devise an institutional structure to ensure that the fruits of new technology were accessible to all those who required it.

NEHU to maintain Pachhunga college in Mizoram

The North-Eastern Hill University will look after the Pachhunga College in Mizoram. The agreement for transfer of the college to the university was signed recently in Aizawl. This is reported to be a significant step towards realisation of the aspirations of the people of Mizoram for qualitative higher education and in fulfilment of the long desire of the university, to improve the education standards in the state. The Vice-Chancellor of the university, Dr A.K. Dhan has sanctioned a sum of Rupees fifty thousand to the college in addition to Rs 1 lakh already utilised for purchase of scientific equipment. The Pachhunga College was the first college in Mizoram which was established in 1958. It has students strength of seven hundred at present.

Seminar on population education

A five-day seminar on population education was organised recently in Patna by the National Council of Educational Research and Training and the A.N. Sinha Institute of Social Studies. Dr. R.C. Sharma, UNESCO expert

acquainted the participants with the existing problem in the context of total developmental effort. He dealt with the dangers of neglecting the unchecked growth of population and stressed the role of education in changing the attitudes of the masses in favour of smaller family. He said that population education strategies would differ from country to country on account of varying cultural situations.

Prof. B.S. Parikh of the NCERT explained the population situation in the country and the response of the educationists in this context. He dealt the relationship of population dynamics and development and explained the difference between population education and family planning. Dr. (Miss) Shushma of the NCERT spoke on the methodological aspects of integrating population education in the curriculum. Alternative curricular approaches to meet the demand were explained by her. Shri Ramesh Chandra of the NCERT outlined the training programmes to be adopted for population education and explained the work done by the Council.

PAU organises Botany conference

Inaugurating the fifth annual conference of the Society for Advancement of Botany organised by the Botany Department of Punjab Agricultural University, Dr. A.S. Cheema, Vice-Chancellor of the University stressed the need for according primary importance to pulse and oilseeds crops which were at present restricted to drylands. Necessary emphasis was being given in improving the yield potential of these crops. Dr. Cheema said that scientists should evolve the varieties having the potentiality to respond to irrigation and fertilizer application. The Botanists should collaborate in achieving stable and high yield of various crops. It was equally important to evolve flood escaping varieties which showed early seedling vigour, rapid development of deep root system and early maturity. Dr. Cheema said that agriculture should not be treated as a mean to provide

quality food but it should be looked upon as a source of economic growth.

Agricultural research at Bhabha Atomic Centre

The Biology and Agriculture Division of the Bhabha Atomic Research Centre in Bangalore has developed a variety of high yielding groundnuts which will eliminate the import of edible oil and earn considerable foreign exchange. Shri S.H. Patil, Scientific Officer of the Research Centre said recently that the special varieties have been developed by inducing genetic changes in the yield through radiation techniques. The state governments of Karnataka, Gujarat, Maharashtra, Madhya Pradesh and Andhra Pradesh have taken up appropriate measures for test production.

Osmania Varsity seminar on population education

Inaugurating the seminar on population education for adults organised by Adult Education Unit of the Osmania University, Hyderabad, Shri B. Venkata Ram Reddy, Andhra Pradesh Education Minister stressed the need to revolutionise the mass education techniques to control population explosion in the country. He said education must grow out of the experience of the common man and the educator should mix up with the masses to change their attitudes. This technique was relevant to our society inhibited by religious traditions. We have to choose between the secular aspect of human welfare and tradition bound society. The Minister said economic, social and cultural growth in our society depended on tackling this problem on a priority basis. The educators should clear the bottleneck of persuading the masses.

Prof. G. Ram Reddy, Vice-Chancellor of the University in his presidential remarks pointed out that proper attention was not given to solve this second most important problem after poverty. Family planning was not given priority since independence as reflected in its meagre organisation and fund allocation. The programme

had made only a dent on the massive problem. The Vice-Chancellor asked the NSS Unit of the university to concentrate their energies on the implementation of population education programmes for adults.

IIT Kanpur offers short term training courses

As part of the continuing education programmes, the Indian Institute of Technology, Kanpur, will offer a number of short-term intensive courses for training of persons from industry, research and development laboratories and educational institutions. The programme will be primarily meant for engineering college teachers but the facilities will also be offered to engineers under the quality improvement programme of the Union Ministry of Education. The courses will be conducted in advanced machine design, recent trends in solid state electronic devices, hydraulic structures, simulation, design and analysis of chemical reactors, traffic flow analysis, momentum transfer operations in chemical engg, computers in power systems, monitoring and control and thyristor power controllers and drives. The details of the courses can be obtained from the respective departments of the Institute.

Exploration of new historical sources proposed

Prof. Nurul Hasan delivered recently a lecture on economic structure of the village society during the Mughal Empire organised by the History Department of the Osmania University as part of the University Diamond Jubilee celebrations. He said the data available about medieval history was inadequate and many of its social aspects had to be brought to light. Historians should explore new historical sources to evaluate and draw conclusions. Prof. Nurul Hasan referred to the economic structure during the Mughal period and said ownership of agriculture land was vested in the individuals. Land was never misused in the way it was done in Europe during that period for non-farming purposes. The economic holdings of a person gave him

political, economic and social power in the village. The money lender played an important role in acting as a link between the State and the individual in the village. The villagers also received invisible income from those employed in urban areas.

Prof. G. Ram Reddy, Vice-Chancellor of the university who presided said that the present administration continued to be revenue cultured.

Jadavpur workshop on adult education

Dr. P.C. Chunder, Union Education Minister inaugurated recently the state level workshop on adult education organised by the Jadavpur University. Dr. Chunder felt that the adult education programme in the state had not made much headway and should be launched with all seriousness. The adults could never establish rapport with the outside world unless they were educated. The government had increased the budget allocation from 18 crores in the fifth plan to Rs. 200 crores. The Union Minister called upon the universities and other institutions to cooperate and make the programme a success.

Shri L.R. Shah, Programme Adviser on National Service Scheme in the Union Ministry of Education said the programme was likely to cover hundred million people in the next five years. Funds have been provided to about forty-one universities to formulate their plans for participation in the National Adult Education Programme.

Shri M.L. Mehta of the University Grants Commission said that unless the literacy rate was improved, the country could not prosper.

Computer studies at ISI

The Indian Statistical Institute has been using fast and accurate computing equipment for processing and analysis of information. The Institute started functioning with desk calculating machines, punched card machines and in the early fifties pioneered in the use of electronic computers. The Institute collaborated with Jadavpur University during sixties to produce the first indigenously designed

and built transistorised computer which was installed at the University in 1966. After its prolonged efforts to acquire a third generation computer system, the Institute has recently been allotted an EC 1033 imported from the USSR. Electronic computers at the Institute are used for theoretical and applied research and for training programmes. Computer programming at the user's level is a compulsory subject for degree students at the Institute. The Institute runs an advanced diploma course in computer science which has recently been upgraded from a one-year to a two year programme. Three month's intensive course on computer programming and applications is offered to research workers and persons with advanced level of academic record. Special programmes on computer programming are also available to foreign students. A year's course on operation of equipment for data preparation for automatic processing is also offered by the Institute.

ISM to organise petroleum seminar

The Indian School of Mines in Dhanbad proposes to organise a seminar on 'Petroleum Exploration & Exploitation' during August, December 1979 and March 1980. The main objective of the seminar will be to bring into focus the recent trends and problems in petroleum exploration and exploitation with special reference to the conditions prevailing in this country and to promote exchange of views and dissemination of information among those who are interested in the field. The School proposes to hold the seminar in three discreet parts for effectively promoting the principal objective of the seminar.

The session on Petroleum Exploration on land & offshore (geological & geophysical methods) will meet in August, 1979. The second and the third sessions on Progress of Drilling in India (Oil well drilling and drilling for mineral exploration and groundwater) and Exploration of Oil & Gas Fields (on land and offshore) will be conducted in December 1979 and March 1980 respectively.

Sports promotion by Parliamentary Forum

Inaugurating the Parliamentary Forum for Sports Shri K. S. Hegde, Lok Sabha Speaker said that India was not lacking sports talent but adequate attention was not being given to it. It required expert handling to put the country on top in the international sports arena. He reiterated his decision of setting up a parliamentary committee to look into the formulation of sports policy in consultation with the Education Ministry.

Dr. P. C. Chunder, Union Education Minister expressed his happiness at the launching of the Forum and assured full co-operation and help from his Ministry to the Forum and the proposed parliamentary committee.

Shri Ram Niwas Mirdha, Deputy Chairman of the Rajya Sabha and President of the Forum said that sports was not just competitiveness but was a great national cause. The whole country should become sports-minded through mass participation. The Forum with forty-one members had been formed to highlight the problems relating to sports. We as a nation had not given it due prominence. Shri Mirdha said we would try to create a favourable climate for sports which will give encouragement to sportsmen as well.

Sports medicine meet

The second annual conference of the Maharashtra State Association of Sports Medicine was held recently in Bombay. Shri S.K. Wankhede in his inaugural address stressed the need for greater encouragement for sports activity, allotment of additional funds and planned development of training for sportsmen spread over a number of years. Dr. A.K. Keole in his paper on 'Role of vision in sports' emphasised that a survey of sports in all respects was necessary to compare the quality of performance. A comparative data could help modify and improve sports activity and act as a guideline for future developments. The session recommended to the Union Health Ministry

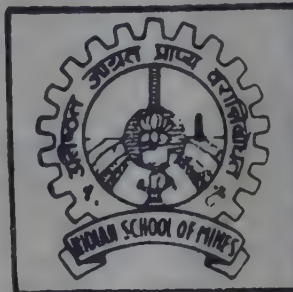
that sports medicine centres be established at all district hospitals and medical colleges. Provision of medical check up facilities to all registered players in the various disciplines have been recommended. The meeting urged a co-ordinated attempt among the sports associations and the Maharashtra State Association of Sports Medicine in the preparation of teams for national and international events.

World champion Michael Ferreira, former test cricketer Polly Umrigar, Dr. Naushir Wadia, Dr. Satish Mody, Dr. Samat Bhagwati and Dr. R.F. Dhir participated among others in the panel discussion on 'backache'.

Research facilities at British Council Library

The British Council Library in New Delhi has reopened recently

with additional facilities for research scholars and readers. The library has arrangements for display of about seventy thousand books which provide reading and borrowing material for its ten thousand members. It has the facility to provide an article published in any language in any part of the world to the research scholars. Urgent requirements are also met by exploiting the Council's access to the diplomatic bag. A special facility of selective dissemination of information is provided to research scholars. The Council keeps a track of the specific requirements and the information obtained is passed on to the research scholars. The library provides photocopying facility to the researchers. The library lending facility is also made available to the outstation members.



Indian school of Mines

DHANBAD

Advt No 420002/79

25 April 1979

The Indian School of Mines (deemed to be a University under the UGC Act) invites applications for the following posts:

1. One Lecturer (Rs. 700-1600) in Mathematics (for the Department of Physics and Mathematics): V Plan vacancy, likely to become permanent in due course. **Qualifications:** (i) A master's degree in Mathematics. (Essential), (ii) A Doctorate degree in Mathematics, preferably Applied Mathematics (Essential), (iii) Two years experience (Essential) including experience of teaching at post-graduate level.

Further details on request.

2. Senior Scientific Assistant (Geochemistry) (Rs. 550-900)—One for the Department of Applied Geology. **Qualifications:** (i) M.Sc. in Chemistry (Physical, Inorganic or Analytical) (Essential), (ii) Two years experience in analysis of rocks, minerals and ores (Essential), (iii) Some experience in operation of Atomic Absorption Spectrophotometer, Universal Spectrophotometer, Flame Photometer, etc (Desirable).

3. Senior Library Assistant: (Rs. 550-900)—One for the Central Library. **Qualifications:** (i) A good Bachelor's degree with a Diploma/Degree in Library Science (Essential). (ii) Three years experience in a technical or scientific Library (Essential), (iii) Good knowledge of Documentation work, UDC System and AACR Rules (Essential) (iv) Good handwriting and knowledge of typing (Desirable).

4. **Senior Assistant (Public Relations)** (Rs. 550-900)—One in the General Office. **Qualifications:** (i) Graduate, with postgraduate degree in Journalism (Essential), (ii) Three years journalistic experience or experience in Publicity and Public Relations Work (Essential), (iii) Experience in writing feature articles and in editing, etc (Desirable.)

5. **Senior Statistical Assistant** (Rs. 550-900)—One in the General Office. **Qualifications:** (i) M.A./M.Sc. in Statistics (Essential), (ii) Two years experience in compiling and analysing educational and related statistics (Essential), (iii) Experience in educational administration (Desirable).

6. **Technical Assistant** (Rs. 425-700)—One for the Rock Mechanics Laboratory in the Department of Mining Engineering. Two years assignment in an R&D Project. **Qualifications:** (i) Diploma in Mech Engg (Essential), (ii) Two years experience in a mechanical workshop (Essential), (iii) Experience in preparation of rock specimens in a research/testing/educational laboratory (Desirable).

7. **Technical Assistant (Fine Mechanic)** (Rs. 425-700)—One for the Department of Engineering and Mining Machinery. **Qualifications:** (i) ITI Certificate (or equivalent qualification) in any mechanical trade (Essential), (ii) Experience in repair and maintenance of mechanical equipment in a Machine/Fitting shop for a period of five years (Essential), (iii) Experience of making models of machinery or fabricating mechanical instruments (Desirable).

8. **Semi-Professional Assistant:** (Rs. 330-560)—One for the Central Library. **Qualifications:** (i) Matriculation or Higher Secondary, with Certificate (one-year course) in Library Science (Essential), (ii) Two years experience in a technical or scientific Library (Essential).

Besides pay, ISM employees get allowances as admissible to Central Govt employees. Total emoluments at the stages of Rs. 330/-, 425/-, 550/- and 700/- currently come to Rs. 512.10, Rs. 621.70, Rs. 800.30 and Rs. 1018.50 respectively. Higher initial salary in the specified scale of pay may be granted to specially qualified and experienced candidates.

Age: Normally not more than 35 years for Lecturer and SSA or equivalent posts, and 30 years for TA/SPA/Lib Asstt—relaxable in case of persons otherwise considered specially suitable.

Other things being equal, preference will be given to SC/ST candidates.

Further details and prescribed application forms are obtainable from the Registrar/Indian School of Mines/Dhanbad-826004 on sending a self-addressed envelope of size 30 cm x 12 cm, affixed with postage of the value of Rs. 3.40 only. Completed application forms should reach the REGISTRAR on or before 4th June 1979.

CANVASSING IN ANY FORM WILL BE TREATED AS DISQUALIFICATION

S. P. VARMA
REGISTRAR

UGC annual report

In its annual report for 1977-78, the University Grants Commission has suggested the desirability of not opening new undergraduate and postgraduate colleges during the next five years except in the tribal and backward areas. It has been suggested that the plan funds provided to the State governments should be utilised for consolidation and not for expansion. The prime need has been felt for full support to the existing universities and correction of regional imbalances. The report has recorded that the growth rate in enrolment in universities had dropped by three-fourth since the last decade. As against twelve per cent growth rate during the last decade the average for the period 1973-78 had been 3.5% per annum, which is regarded as satisfactory. Efforts will be made to maintain this growth rate while ensuring that weaker sections are not adversely affected. The report has also recorded an upward trend in the enrolment in science subjects which has risen to 18.4% during 1977-78. The enrolment among commerce students has also increased. Against 49 universities and 1783 colleges with an enrolment of 6,63,661 in 1961-62, the number increased to 115 universities and 4,610 colleges during the year 1977-78. The enrolment in these institutions during the year has been shown as 25.65 lakhs. The report has noted the strong desire for making changes in the educational system.

Qualifying standard for MBBS admission

The Medical Council of India has announced recently that students passing XII standard or any other equivalent examination with lower level English will be considered for admission to the MBBS course from the next academic session. These students would however be required to complete a year's compulsory English course which will run concurrently with the first year's studies to obtain proficiency in the language.

Kashmir Varsity establishes Iqbal institute

The Council of the University of Kashmir at its recent meeting decided to establish the Iqbal Institute at the campus for conducting research in Iqbalism and other related areas of study. The Iqbal Professor shall also act as the Director of the Institute.

ICMR offers research scholarships during vacation

Prof. V. Ramalingaswami, Director-General of the Indian Council of Medical Research said recently in New Delhi that in order to promote aptitude for research among the medical undergraduates studying in various colleges in the country, the Council will offer a number of short-term research studentships during summer holidays. The main objective of the scheme was to train talented students at an early age to do bio-medical research which was not popular in the country. The first batch of forty-five students has been selected by the Council for the ensuing summer holidays. The students will be given a fixed stipend to carry out short-term research work.

Fellowships for Dravidian linguistics

The International School of Dravidian Linguistics, Trivandrum has awarded research fellowships to : Prof. Javare Gowda, former Vice-Chancellor of Mysore University; Prof. M. Chindananda Murthy of Bangalore University; Prof. R.C. Hiremath, former Vice-Chancellor of Karnatak University; Prof. V.S.P. Manickam, former Professor at the Annamalai University and Prof. M.E. Manickavasagam of Arignar Anna College, Nagercoil, for research and promotion of Dravidian languages. The junior fellowships have also been awarded by the School for a survey-study on the tribal languages of the Dravidian family spoken in Madhya Pradesh, Bihar and Orissa.

Dr. V.I. Subramaniam, Visiting Professor of the School said

that a three-day seminar on the culture and language of Tulu would be held at Udupi from May 19. A three-day conference of Dravidian Linguistics would be held at Calicut University campus from May 24 where about three hundred delegates including some from foreign countries were expected to participate.

Sports policy

Shri Dhanna Singh Gulshan, Union Minister of State for Education said recently that the government was thinking of evolving a new national policy on sports. The All-India Council of Sports had been requested to recommend the lines on which the policy could be formulated. The Union Minister said that the government was implementing some of the schemes aimed at enthusing the younger generation in sports and games. The schemes included sports talent search scholarships, national programme of rural sports tournaments from block to national level, sports festivals for women and grant of Arjuna Awards to outstanding sportsmen and women. The competitive aspect of sports was being looked after by national sports federations. The Union Minister said that the State Governments have been asked to consider the possibility of prescribing sports and games as a compulsory subject in schools.

Age for admission in Delhi Varsity

The Academic Council of the Delhi University in its recent meeting decided to raise the minimum age for admission to its various undergraduate courses from sixteen to seventeen years with relaxation upto six months. The University will receive for the first time the students who have completed twelve years school's education or plus two stage of the 10+2+3 scheme. The Council revised the various courses for the undergraduate studies at the university. The Council decided to introduce diploma course in journalism from the next session.

A committee has been constituted to recommend the various measures to be taken to start the course.

Mysore Varsity convocation

Dr. Shivaram Karanth, Jnanpeeth award winner delivered the 59th convocation address at the Mysore University recently. He expressed his concern over the deterioration of character among the youth and said the universities should inspire and create in them an ardent craving for a deeper and vaster understanding of the place of man in the universe. He pointed out that the popularity of universities depended on the brilliance of their teachers. An honest teacher who was in constant touch with his pupils could make them alive in the world. Dr. Karanth said that research should be a continuous process and it should not end with one getting a doctorate degree. Research activities should become a part of the collegiate education in the country.

Polish Government scholarships

The Union Ministry of Education have invited applications for the award of scholarships under the Indo-Polish Cultural Exchange Programme. The scholarships are tenable for post-graduate studies in town and country planning, advance course in economic planning and doctors's degree courses in the field of construction of machines, energy, irrigation, shipping, electrotechnics, pure mathematics and wood technology. Candidates with at least two consecutive years' teaching/research/practical experience in the subject field in addition to the prescribed qualifications are eligible for the award. The completed applications on the prescribed forms will be entertained by the Department of Education of the Ministry, Shastri Bhawan, New Delhi-110001 upto 8th June, 1979.

Conferences, Seminars & Workshops

May-July, 1979

Date	Subject	Venue	Sponsoring Body
15 Apr—31 May	Summer institute in the philosophy of science	Trivandrum	University of Kerala
23 Apr—13 May	Summer Institute on Energy Utilisation & Waste recycling	Coimbatore	Sri Avinashilingam Home Science College for Women
23 Apr—19 May	Summer Institute on Advanced courses in Research Methodology in Educational Research	Bombay	HJ College of Education, Khar
1 May—10 May	Symposium on the Culmination of social sciences	Gandhigram	Gandhigram Rural Institute
1 May—21 May	Organisation of a Summer institute in Business Administration for College Teachers	Surat	South Gujarat University
1 May—21 May	Summer School on advanced instrumentation	Madras	Madras Inst of Technology
2 May—8 May	Symposium on nuclear interactions at high energies	Rajarammohanpur (Dist Darjeeling)	Univ of North Bengal
2 May—22 May	All India Summer Institute on large scale systems	Madras	College of Engg., Guindy
2 May—10 June	Course on postgraduate diploma in higher education	Madurai	Madurai Kamaraj University
3 May—24 May	Short term institute in linguistics	Kurukshetra	Kurukshetra University
7 May—26 May	Summer School in modern trends in mechanical design of turbo-machines	Allahabad	Motilal Nehru Reg Engg College
7 May—2 June	Summer Institute in English	Bangalore	University of Bangalore
7 May—2 June	Summer Institute of English	Hyderabad	Central Inst of English & Foreign Languages
7 May—2 June	Summer Institute in Topics in Number Theory	Madurai	Madurai Kamaraj University, School of Mathematics
7 May—5 June	Summer Institute in Algebra	Madras	Ramanujan Inst for Advanced Study in Maths, Madras
10 May—6 June	Short term institute in numerical mathematics for college teachers	Surat	SVR College of Engg & Technology, Surat
10 May—8 June	Summer Institute in Modern Logic	Kolhapur	Shivaji University
14 May—4 June	Short term Institute in Organometallic chemistry	Lucknow	Univ of Lucknow
14 May—23 June	Summer Institute in Chemistry	Cuttack	Ravenshaw College
15 May—16 May	Seminar on Freedom of the Press	Gauhati	Gauhati Univ., Dept of Journalism
15 May—19 May	Summer Institute in Research methodology for research in industrial management and business administration	Pune	Brihave Mahavidyalaya, College of Commerce
15 May—25 June	All India Summer Institute in Applied Zoology	Nagpur	Nagpur University
16 May—5 June	All India Summer Institute in recent advances in psychology	Varanasi	Kashi Vidyapith, Dept of Psychology
16 May—5 June	Summer Institute in Educational Technology	Indore	University of Indore, Dept of Edn.
16 May—12 June	Summer Institute in Computer Science	New Delhi	School of Computer & System Sciences, J.N.U.
18 May—7 June	Summer Institute in Library & Information Science	Sambalpur	Sambalpur University, PG Dept of Lib & Inf. Science
21 May—8 June	Summer Institute Refresher Course in Mathematics	Kolhapur	Shivaji University
21 May—10 June	Summer Institute in Economics	Cuttack	Ravenshaw College
21 May—10 June	Summer Institute in Library & Information Services for College Librarians	Waltair	Andhra University
21 May—16 June	Summer Institute in advanced topics in applied maths. for college teachers	Madras	Madras Inst of Technology
22 May—27 May	Seminar on problems of modernisation in Bihar politics	Muzaffarpur	University of Bihar
22 May—17 June	Summer Institute on Mathematical concepts & techniques in physical & biological sciences for college teacher	Calcutta	Jadavpur University
25 May—23 June	Short-term institute in mathematical economics and econometric methods	Tirupati	Sri Venkateswara Univ. College of Sciences
28 May—17 June	Summer Institute in Modern political analysis	Aurangabad	Marathwada University
29 May—9 June	22 COSPAR (ICSU) INCOSPAR (INSA)/ISRO on aspects of space research	Bangalore	INCOSPAR, Ahmedabad
30 May—30 June	Summer Institute on an integrated approach to momentum heat and mass transfer	Patiala	Thapar College of Engineering
May 1979	Summer Institute in Library & Information Science	Trivandrum	University of Kerala
May/June 1979	Summer Institute in Political Science	Jabalpur	University of Jabalpur
May/June 1979	Seminar on reviewing of syllabus teaching programme and examinations system of PG Biochemistry courses in Indian universities	Calcutta	Calcutta University, Deptt of Biochemistry
1 June—22 June	Summer Institute on problems of teaching & research in history	Mysore	Mysore University
1 June—30 June	Summer Institute in Life Sciences	Cuttack	Ravenshaw College
1 June—1 July	Summer Institute on improved teaching methods in plant breeding	Hissar	Haryana Agricultural University
2 June—22 June	Summer Institute in Commerce	Hyderabad	Osmania University
4 June—23 June	Summer Institute in Mental Retardation	Pune	Univ of Pune, Dept of Experimental Psychology

Date	Subject	Venue	Sponsoring Body
4 June—25 June	Summer Institute in Applications of Electron Microscopy in Biology and Agriculture	Bangalore	Univ of Agricultural Sciences
4 June—30 June	Summer Institute for B.Ed. College Lecturers in English	Hyderabad	Central Inst of English & Foreign Languages
5 June—9 June	Planning for health and family welfare programme	Bangalore	Indian Inst of Management
5 June—29 June	Summer Institute in plant physiology	Varanasi	BHU, Dept of Botany
9 June—12 June	Symposium on recent trends in aphidological studies	Bhubaneswar	Utkal Univ., Dept of Zoology
11 June—30 June	Summer Institute in Agricultural Economics	Hissar	Haryana Agricultural University
11 June—30 June	Summer Institute in Groundwater resources technology	Hyderabad	Osmania Univ., Centre of Exploration Geophysics
12 June—26 June	Short term course on design fabrication & application of lasers	Bangalore	Indian Institute of Science
12 June—28 July	Winter School in theoretical particle physics (astrophysics)	Bangalore	Tata Institute of Fundamental Research
14 June—27 June	Workshop on better teaching methods for Home Science teachers of Andhra Pradesh	Tirupati	Sri Venkateswara University College of Sciences
16 June—6 July	Summer Institute in Educational Technology	Chandigarh	Panjab University
25 June—30 June	Refresher course in Asian Studies	Madanapalle	Besant Theosophical College
26 June—30 June	Housing and environment planning & management	Bangalore	Indian Inst of Management
1st week of June	Workshop on the role of psychological testing in education and vocational guidance	Hyderabad	Osmania Univ., Dept of Psychology
June 1979	Symposium on Molecular Spectroscopy	Annamalainagar	Annamalai University
2 July—22 July	Summer Institute in Biological Engineering	Bangalore	Indian Institute of Science
4 July—5 July	Symposium on Micro-electronics	Calcutta	I.E.T.E.

Subject Index

Agriculture

11 June—30 June	Summer Institute in Agricultural Economics	Hissar	Haryana Agricultural University
5 June—29 June	Summer Institute in plant physiology	Varanasi	B.H.U., Dept of Botany
1 June—1 July	Summer Institute on improved teaching methods in plant breeding	Hissar	Haryana Agricultural University

Computers

16 May—12 June	Summer Institute in Computer Science	New Delhi	School of Computer & System Sciences, J.N.U.
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Economics

25 May—23 June	Short term institute in mathematical economics and econometric methods	Tirupati	Sri Venkateswara Univ. College of Sciences
2 June—22 June	Summer Institute in Commerce	Hyderabad	Osmania University
21 May—10 June	Summer Institute in Economics	Cuttack	Ravenshaw College

Education

2 May—10 June	Course on postgraduate diploma in higher education	Madurai	Madurai Kamaraj University
16 June—6 July	Summer Institute in Educational Technology	Chandigarh	Panjab University
16 May—5 June	Summer Institute in Educational Technology	Indore	Univ of Indore, Dept of Education
23 Apr—19 May	Summer Institute in Advanced course in Research Methodology in Educational Research	Bombay	H.J. College of Education, Khar

Engineering

2 May—22 May	All India Summer Institute on large scale systems	Madras	College of Engineering, Guindy
7 May—26 May	Summer School in Modern trends in mechanical design of turbo machines	Allahabad	Motilal Nehru Reg Engg College

Geophysics

11 June—30 June	Summer Institute in groundwater resources technology	Hyderabad	Osmania Univ., Centre of Exploration, Geophysics
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History

1 June—22 June	Summer Institute on problems of teaching & research in history	Mysore	Mysore University
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Home Science

14 June—27 June	Workshop on better teaching methods for home Science teachers of Andhra Pradesh	Tirupati	Sri Venkateswara University
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Instrumentation

1 May—21 May	Summer School on advanced instrumentation	Madras	Madras Inst of Technology
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Journalism

15 May—16 May	Seminar on Freedom of the Press	Gauhati	Gauhati Univ., Dept of Journalism
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Language & Literature

4 June—30 June	Summer Institute for B.Ed. College Lecturers in English	Hyderabad	Central Inst of English and Foreign Languages
7 May—2 June	Summer Institute in English	Bangalore	University of Bangalore
7 May—2 June	Summer Institute in English	Hyderabad	Central Inst of English and Foreign Languages
3 May—24 May	Short term institute in linguistics	Kurukshetra	Kurukshetra University

Library & Information Science

18 May—7 June	Summer Institute in Library & Information Science	Sambalpur	Sambalpur University PG Dept of Library & Information Science
May 1979	Summer Institute in Library & Information Science	Trivandrum	University of Kerala

Date	Subject	Venue	Sponsoring Body
21 May—10 June	Summer Institute in Library & Information Services for College Librarians	Waltair	Andhra University
Life Sciences			
15 May—25 June May/June 1979	All India Summer Institute in Applied Zoology Seminar on reviewing of syllabus teaching programme and examinations system of PG Biochemistry courses in Indian universities	Nagpur Calcutta	Nagpur University Calcutta University, Deptt of Biochemistry
4 June—25 June	Summer Institute in Applications of Electron Microscopy in Biology and Agriculture	Bangalore	Univ of Agricultural Sciences
2 July—22 July	Summer Institute in Biological Engineering	Bangalore	Indian Institute of Science
1 June—30 June	Summer Institute in Life Sciences	Cuttack	Ravenshaw College
9 June—12 June	Symposium on recent trends in aphidological studies	Bhubaneswar	Utkal Univ., Dept of Zoology
Management			
1 May—21 May	Organisation of a summer institute in Business Administration for College Teachers	Surat	South Gujarat University
15 May—19 May	Summer Institute in Research Methodology for research in industrial management and business administration	Pune	Brihave Mahavidyalaya College of Commerce
Mathematics			
10 May—6 June	Short term institute in numerical mathematics for college teachers	Surat	SVR College of Engineering & Technology, Surat
21 May—16 June	Summer Institute in advanced topics in applied mathematics for college teachers	Madras	Madras Inst of Technology
7 May—5 June	Summer Institute in Algebra	Madras	Ramanujan Inst for Advanced Study in Mathematics, Madras
7 May—2 June	Summer Institute in Topics in Number Theory	Madurai	Madurai Kamaraj University, School of Mathematics
22 May—17 June	Summer Institute on Mathematical concepts & techniques in physical & biological sciences for college teachers	Calcutta	Jadavpur University
21 May—8 June	Summer Institute Refresher course in mathematics	Kolhapur	Shivaji University
Nuclear Engineering			
2 May—8 May	Symposium on nuclear interactions at high energies	Rajarammohanpur (Dist Darjeeling)	Univ of North Bengal
Philosophy			
25 June—30 June	Refresher course in Asian studies	Madanapalle	Besant Theosophical College
10 May—8 June	Summer Institute in Modern Logic	Kolhapur	Shivaji University
15 Apr—31 May	Summer institute in the philosophy of Science	Trivandrum	University of Kerala
Physics & Chemistry			
12 June—26 June	Short term course on design fabrication & application of lasers	Bangalore	Indian Inst of Science
14 May—4 June	Short term institute in Organo-metallic chemistry	Lucknow	University of Lucknow
14 May—23 June	Summer Institute in Chemistry	Cuttack	Revenshaw College
30 May—30 June	Summer Institute on an integrated approach to momentum, heat and mass transfer	Patiala	Thapar College of Engineering
4 July—5 July	Symposium on micro-electronics	Calcutta	Instn of Electronics and Telecommunication Engineers
June 1979	Symposium on Molecular spectroscopy	Annamalainagar	Annamalai University
12 June—28 July	Winter School in theoretical particle physics (astrophysics)	Bangalore	Tata Inst of Fundamental Research
Political Science			
22 May—27 May	Seminar on problem of modernisation in Bihar politics	Muzaffarpur	University of Bihar
28 May—17 June May/June 1979	Summer Institute in Modern political analysis Summer Institute in Political Science	Aurangabad Jabalpur	Marathwada University University of Jabalpur
Power & Energy			
23 Apr—13 May	Summer Institute on Energy Utilisation and Waste recycling	Coimbatore	Sri-Avinashilingam Home Science College for Women
Psychology			
16 May—5 June	All India Summer Institute in recent advances in psychology	Varanasi	Kashi Vidhyapith, Dept of Psychology
4 June—23 June	Summer Institute in Mental Retardation	Pune	Univ of Pune, Dept of experimental Psychology
1st week of June	Workshop on the role of psychological testing in education and vocational guidance	Hyderabad	Osmania University, Dept of Psychology
Sociology			
26 June—30 June	Housing and environment planning and management	Bangalore	Indian Inst of Management
5 June—9 June	Planning for health and family welfare programme	Bangalore	Indian Inst of Management
1 May—10 May	Symposium on the culmination of social sciences	Gandhigram	Gandhigram Rural Institute
Space Research			
29 May—9 June	22 COSPAR (ICSU)/INCOSPAR (INSA)/ISRO on aspects of space research	Bangalore	INCOSPAR, Ahmedabad

Further details can be had from :
THE BRITISH COUNCIL LIBRARY
AIFACS Building, Rafi Marg, New Delhi-110001

UNIVERSITY OF DELHI DELHI-110007

Advt. No. Estab. IV/58/79

Dated the 30th April, 1979

Applications on the prescribed form are invited for the following posts:

Department	Designation
Economics South Delhi Campus Chinese and Japanese Studies	One Professor of Mathematical Economics One Reader in Business Economics (i) One Lecturer in Japanese Language (ii) One Lecturer in Chinese Language and History.
Law Centre—I	One Lecturer (leave vacancy upto 24.7.80)
Modern European Languages	One Lecturer in French (leave vacancy upto 15th October, 1980) Research Associates
Physics & Astrophysics	One Carpenter
Botany	Two Senior Laboratory Assistants (Temp. but likely to continue) (One reserved for Scheduled Caste)
Anthropology	*One Laboratory Attendant (Temporary but likely to continue) (Reserved for S/C. & S/T.)
Geology	*Two Technical Assistants (Temporary) (One each reserved for S/C. & Ex-serviceman).
Chemistry	

*Note: General candidates would also be eligible to apply. The general candidates would, however, be considered only if no suitable Scheduled Caste/Scheduled Tribe/Ex-serviceman candidates are available for appointment to the vacancy reserved for them.

The Scales of Pay of the post are

Professor: Rs. 1500-60-1800-100-2000-125/2-2500.

Reader: Rs. 1200-50-1300-60-1900.

Lecturer: Rs. 700-40-1100-50-1600.

Research Associate: Consolidated monthly emoluments as under:- A—Rs. 1000/- p.m. fixed; B—Rs. 1200/- p.m. fixed; C—Rs. 1400/- p.m. fixed on the recommendation of the Selection Committee.

Carpenter: Rs. 330-8-370-10-400-EB-10-480.

Senior Laboratory Assistant: Rs. 380-12-500-EB-15-560.

Laboratory Attendant: Rs. 210-4-250-EB-5-270.

Technical Assistant: Rs. 425-15-500-EB-15-560-20-700.

All the posts (except Research Associate) carry D.A., C.C.A. and H.R.A. as admissible under the rules in force in the University from time to time.

ESSENTIAL QUALIFICATIONS FOR Professorships: A Scholar of eminence.

Independent published work of high standard and experience of teaching Post-graduate classes and guiding research for a considerable period desirable.

Readerships

Good academic record with first or high second class Master's Degree in the subject concerned with a Doctor's Degree or equivalent published work.

Independent published work (in addition to the published work mentioned above) with at least 5 years' teaching experience in Honours/Post-graduate classes essential.

Lectureships Essential

Good academic record with a first or high second Class Master's Degree or an equivalent degree of a foreign University in the subject concerned.

Note: Second Class would mean at least 50% marks in the subject or equivalent grade).

Desirable

(i) A Doctor's Degree or Evidence of Research work of equivalent standard in the subject concerned. (ii) Teaching experience of Degree/Post-graduate Classes.

Provided if a teacher is not a Ph.D./M.Phil./M.Litt. at the time of his/her appointment and does not qualify himself/herself for the award of Ph.D./M.Phil./M.Litt. Degree from a recognised University in a subject which is being taught by him/her within a period of five years from the date of his/her appointment or does not give evidence of research work within that period in the subject concerned, he/she shall not be entitled to any future increments after the expiry of the said period of five years till such time he/she fulfils the above mentioned requirements.

Lectureship in Law

Consistently good academic record with a first or high second Class (B+) Master's Degree in the Law OR an equivalent Degree of a foreign University in the subject concerned.

Explanation

Consistently good academic record would mean overall record of all assessments throughout the academic career leading to the Master's Degree which should be at least B+ or high second Class.

Research Associate in Physics

Consistently Good academic record with first or high second Class (B+) Master's degree or an equivalent degree of a foreign University in Physics.

Note:

Initial appointment will be for a tenure period of three years extendable by another two years only. In no case

the tenure will extend 5 years in all.

Carpenter

- Trade certificate or Diploma from a recognised Institution with some experience;
- Should have fair knowledge of various kinds of timbers and should be able to help in selecting timber to suit different jobs;
- Should be able to prepare articles of furniture and other laboratory apparatus to accurate dimensions (specifications) of very fine finish.

Note

Any of the above qualifications can be relaxed at the discretion of the Selection Committee in case of an experienced candidate, having high degree of professional competence.

Laboratory Attendant (Geology)

Should have passed the Matriculation or an equivalent examination with Science subjects.

Senior Laboratory Assistants (Anthropology)

- Hr. Secondary or equivalent examination with science subjects.
- 5 years' experience as Junior Laboratory Assistant in an Anthropological Laboratory.

Technical Assistant (Chemistry)

Graduate in Science.
Experience in laboratory techniques of the subject.

Special/Desirable Qualifications For Professorship in Mathematical Economics.

Mathematical Treatment of Economic Theories.

Lectureship in Japanese Language

Training in Japan in Japanese Language.

Lectureship in Chinese Language & History

Good knowledge of the Chinese language and ability to teach the language as well as specialised work in late 19th and early 20th century history with the ability to teach this period.

Lectureship in Law

Specialization and/or teaching experience in any of the following subjects:-

- Element of Indian Legal System
- Mercantile Law
- Property Law,
- Military Law,
- Legislative Drafting,
- International Trade
- Law Relating to Elections,
- Law of Evidence and
- Civil and Criminal Procedure.

Lectureship in French

Ability to speak correct French and experience of teaching French for not less than 2 years.

Carpenter (Botany)

Knowledge of handling minor repairs of electrical fittings in the laboratories.

Laboratory Attendant (Geology)

Should have worked in a laboratory. The prescribed application form can be had from the Information Office of the University either personally or by sending a self addressed envelope (size 5"×11") with postage stamps worth Rs. 2-80

Candidates will have to produce original documents relating to their age, qualifications, experience at the time of interview.

Applications (separate for each post) accompanied by attested copies of Degrees, other certificates, marksheets, published research articles etc. should reach the undersigned not later than 25th May, 1979.

Note

1. It will be open to the University to consider the names of suitable candidates for teaching posts who may not have applied. Relaxation of any of the qualifications may be made in exceptional cases, in respect of all teaching posts on the recommendations of the Selection Committee.
2. Canvassing in any form by or on behalf of the candidates will disqualify.
3. Candidates from outside Delhi for teaching posts, called for interview will be paid to and from single Second Class Rail fare.

REGISTRAR

SRI VENKATESWARA UNIVERSITY TIRUPATI

Advertisement No. EII-2/1979 (1)
Dated 1.5.1979

Applications are invited in the prescribed form for the following posts in the University Service on or before 31.5.1979.

Post, Department & No. of Posts

I. S.V.U. College of Arts & Sciences, Tirupati

1. Professor of Botany—1 (Ty.)
2. Reader in Botany—1
3. Lecturers in Botany—2 (Ty.)
4. Reader in Zoology—1 (Ty.)
5. Lecturer in Bio-chemistry—1
6. Reader in Geology—1
7. Readers in Home Science—2
8. Lecturers in Mathematics—2 (1 Ty.)
9. Lecturer in Physical Anthropology & Pre-historic Archaeology—1
10. Lecturer in Psychology—1 (Ty.)
11. Lecturer in Statistics—1 (Ty.)
12. Assistant Director in Adult Education—1
13. Professor in Commerce—1
14. Reader in Commerce—1
15. Lecturer in English—1 (Ty.)
16. Lecturer in Education—1
17. Lecturers in Economics—3 (1 Ty.)
18. Reader in Vietnamese Language (Area Studies Programme)—1
19. Lecturer in Vietnamese Language (Area Studies Programme)—1
20. Lecturer in French (Area Studies Programme)—1
21. Lecturer in German—1
22. Lecturer in French—1
23. Reader in Hindi—1 (Ty.)
24. Lecturer in Hindi—1 (Ty.)
25. Reader in Law—1
26. Lecturer in Library & Information Science—1
27. Professor of Fine Arts—1
28. Professor in Philosophy—1
29. Lecturer in Philosophy—1
30. Professor in Population Studies—1
31. Lecturer in Sanskrit—1
32. Lecturers in Social Anthropology—4
33. Professor in Sociology—1
34. Lecturer in Sociology—1

35. Reader in Tamil—1 (Ty.)
36. Lecturer in Telugu—1 (Ty.)

II. S.V.U. College of Engineering: Tirupati

1. Readers in Civil Engineering—2
2. Lecturers in Civil Engineering—2 (1 Ty.)
3. Readers in Mechanical Engineering—2
4. Lecturer in Electrical Engineering—2 (1 Ty.)
5. Professor in Electronics & Communications Engineering—1
6. Lecturers in Electronics & Communications Engineering—2
7. Lecturer in Humanities—3*

*Two Posts in

Language and literature/History of science and technology/Industrial Psychology/Philosophy (Modern Logic/Philosophy of Science)

And the other post in: English

(*Those applied in response to the University's advertisement made in June, 1978 need not apply).

11. Professor in Chemical Engineering—1

III. S.V.U.P.G. Courses, Cuddapah

1. Reader in Public Administration—1
2. Reader in Commerce—1

IV. S.V.U.P.G. Courses, Kurnool

1. Reader in Quality Control & Operations Research—1

V. S.V.U. Oriental Research Institute, Tirupati

1. Professor—1
2. Reader—1
3. Lecturers—2

Scale of Pay

1. Professor: Rs. 1500-60-1800-100-2000-125/2-2500
2. Reader: Rs. 1200-50-1300-60-1900
3. Lecturer: Rs. 700-40-1100-50-1600, S.V.U. College of Arts & Sciences/S.V.U. College of Engineering, Tirupati/S.V.U. Post-Graduate Courses, Cuddapah/Kurnool.
- *4. Assistant Director in Adult Education: Rs. 400-40-800-50-950
- *5. Lecturer in Library & Information Science: Rs. 400-40-800-50-950.
- *6. Professor: Rs. 1100-50-1300-60-1600
- *7. Reader: Rs. 700-50-1250
- *8. Lecturer: Rs. 400-40-800-50-950

S.V.U. Oriental Research Institute, Tirupati.

(*Equivalent to IV Plan U.G.C. scales (likely to be revised)

All the above posts carry D.A. etc. at the University rates. There will be reservation for S.C./S.T./B.C. candidates for "Lecturers" posts according to U.G.C./State Government guidelines.

The prescribed application form together with the prospectus can be had from the Registrar, Sri Venkateswara University, Tirupati-517502, Andhra Pradesh, on payment of Rs. 5/- either by Andhra Bank Challan or State Bank of India Challan or Crossed *Indian Postal Orders of the said value drawn in favour of the Registrar, Sri Venkateswara University, Tirupati-517502, Andhra Pradesh (*payable at the S.V.U. Campus Post Office, Tirupati).

The recruitment is for the University service in general which includes S.V.

University College of Arts and Sciences and S.V.U. College of Engineering, Tirupati and S.V.U.P.G. Courses at Cuddapah, Kurnool and Kavali.

All teachers are inter-transferable between the University Colleges at Tirupati and P.G. Courses at Cuddapah, Kurnool and Kavali.

A higher initial start in any of the above scales may be given to a candidate with exceptional qualifications and experience.

Six copies of application (for each post) giving full particulars regarding academic qualifications, experience in teaching and research with copies of at least two testimonials (one of which should be from the Head of the Institution where the applicant is now serving or served last) attached to each application should reach the Registrar, Sri Venkateswara University, Tirupati-517502, Andhra Pradesh, India, on or before 31.5.1979 together with Andhra Bank Challan/State Bank of India Challan or Crossed *Indian Postal Orders drawn in favour of the Registrar, S.V. University for Rs. 15/- towards Registration Fee (*Payable at S.V. University Campus Post Office, Tirupati-517502).

Copies of certificates, etc. are to be sent along with their applications. Those who are in employment should send their applications through their present employers. However, candidates already in service may send one copy of the prescribed application together with the Registration fee in advance to save delay.

The applications received after the prescribed date will be rejected and the applicants are not eligible to get the Registration fee, etc. refunded.

The candidates should send their applications to the Registrar, S.V. University, Tirupati in a cover superscribed "Application for the post of ... (S.No.) advertisement No. EIII-2/1979 (1) dated 1.5.1979".

The University reserves to itself the right to increase or decrease the posts, to fill or not to fill any or all of the above posts, and to relax the qualifications when candidates with prescribed qualifications are not available and to consider and appoint persons who may not have applied.

M.J. Kesava Murthy
REGISTRAR

GURU NANAK DEV UNIVERSITY: AMRITSAR

Advertisement No. 4/79

Applications are invited for the following posts on prescribed form obtainable (free of cost) from the office of the Registrar by making written request accompanied by self-addressed stamped envelope of 23x10 cms so as to reach this office by 31-5-1979 along with crossed Indian Postal Order(s) for Rs. 7.50 for posts at Sr. No. 1,2,4,8,9, 10,11,12,13 and Rs. 5/- for other posts (not refundable) drawn in favour of Registrar, Guru Nanak Dev University, Amritsar.

Persons already in employment must

send their applications through their employers.

Higher start in the grade may be given depending on qualifications and experience. Suitable relaxation in qualifications may be allowed, on the recommendation of the Selection Committee, in the case of otherwise deserving candidates.

1. Readers in Chemistry, Physics (2), Statistics, Psychology, Economics (2), Hindi, History (2), Law (for Jullundur Centre), Guru Nanak Studies, Punjabi Studies (2) (Rs. 1200-50-1300-60-1900)
2. Lecturers in Biology (4), Mathematics, Physics (3), Psychology (2), Economics (2), History, Political Science, Law (2)—for Jullundur Centre, English and Guru Nanak Studies (2) (Rs. 700-40-1100-50-1600)
3. Research Associate in Chemistry (Rs. 800/- P.M. fixed)
4. Curator in Biology (Rs. 400-40-800/50-950-unrevised)
5. Research Fellow-cum-Demonstrators in Biology (Rs. 400/- P.M. fixed plus Rs. 100/- P.M. as demonstration allowance).
6. Junior Research Fellows (U.G.C.) in Biology, Chemistry and Economics (Rs. 400/- P.M. fixed).
7. Research Fellows in Mathematics, Chemistry, Political Science and Hindi (Rs. 400/- P.M. fixed)

Guru Ram Dass School of Planning

8. Professor (Rs. 1500-60-1800-100-2000-125/2-2500)
9. Reader (Rs. 1200-50-1300-60-1900)
10. Lecturer (Rs. 700-40-1100-50-1600)

Job Oriented Courses (Temporary)

11. Reader/Project Officer (Rs. 1200-50-1300-60-1900)
12. Lecturers (6) in: Instrumental Analysis and Physical Chemistry (2); Oils, Soaps and Detergents; Textile Chemistry and Dyeing and Finishing (2); Paints and Varnishes; Heat Treatment; Electroplating (Rs. 700-40-1100-50-1600)

University Instrumentation Centre

13. Senior Scientific Officer (Rs. 1100-50-1600)
14. Technician 'C' (Rs. 380-12-500/15-560)
15. Technician 'B' (Rs. 300-8-400-10-450)
16. Technician 'A' (Rs. 225-5-260-6-290/6-308)

General Qualifications (For Serial Nos. 1 and 2)

Readers

Good academic record with a doctoral degree or equivalent published work; evidence of being actively engaged in (i) research or (ii) innovation in teaching methods or (iii) production of teaching materials; about five years' experience of teaching and/or research including at least three years as lecturer or in an equivalent position (may be relaxed in the case of candidates with outstanding research work).

Lecturers

(A) A doctoral degree or research work of an equally high standard, (B) consistently good academic record, that is, First or High Second Class (B in the seven point scale) at the Master's level

and either an average of 55% marks of the two examinations prior to Master's degree or 50% marks in each of the two examinations separately (qualifications relaxable as provided by the (U.G.C.)

Special Qualifications/Specialisations

Serial No. 1 (Readers)

1. Chemistry: Physical or Organic Chemistry
2. Physics: Any modern area of theoretical and experimental Physics including mathematical, elementary particle, nuclear, solid state, Paser or Plasma physics, spectroscopy, chemical physics.
3. Statistics: Applied General Statistics and/or Mathematical Statistics; (Desirable) knowledge of computer programming.
4. Psychology: Personality, Motivation, Social Psychology, Learning.
5. Economics: Economics of Industry/Labour, Economic Growth and Public Finance, Economic Statistics or Monetary Theory and Policy.
6. Hindi: Medieval Literature or Aesthetics (Modern/Medieval) and Philosophies & applications or literary historiography.
7. History: (i) Modern Indian and/or Asian History.
(ii) History of Ideas and Historiography.
8. Guru Nanak Studies: Religious/Historical Studies with particular reference to Sikh Studies; (Desirable) knowledge of Persian/Urdu and Hindi.
9. Law: Capacity to organise and run the LL.B. Courses.
10. Punjabi Studies: Punjabi Literature, Folklore and Culture.

Serial No. 2 (Lecturers)

- (i) Biology: Molecular Biology, Cell Physiology and Bio-Chemistry, Bio-Physics, Microbial/Population/Developmental Genetics, Microbiology and Immunology, Vertebrate Biology, Behavioural/Theoretical Biology, Plant Systematics/Ecology or any other area of modern Biology.
- (ii) Mathematics: Algebra, Analysis, Topology, Liegroups, Linear-Programming or Continuum Mechanics.
- (iii) Physics: As per Reader in Physics above.
- (iv) Psychology: Learning and Cognition; Developmental/Projective/organisational Psychology, or Psychometrics.
- (v) Law: Mercantile Law, Family Law, Constitutional Law, International Law, Legal and Constitutional History, or Law of Torts.
- (vi) English: Preference: Elizabethan and Jacobean Literature.
- (vii) Guru Nanak Studies: Competence for Translation of Guru Granth Sahib into URDU, Linguistics/Anthropological Linguistics, Lexicography, preferably with adequate knowledge of Sikh Scriptures.

Serial No. 3

Ph.D. in Chemistry or M.Sc. with

equivalent research experience.

Serial No. 4

M.Sc. (Biology/Zoology) with at least two years research experience in Systematics/Ecology.

Serial No. 5-7

First or High Second Class Master's Degree with good academic record in the relevant subject, and aptitude for research.

Guru Ram Dass School of Planning

Serial No. 8

Physical (Town and Country) Planning

Serial No. 9

(i) B Arch./B.E. (Civil) or an equivalent degree; (ii) Post-graduate degree/diploma in Town and Country Planning/Landscape Architecture; and (iii) 5 years teaching experience/Town Planning Practice.

Serial No. 10

The same as (i) & (ii) for Serial No. 9 above.

Job Oriented Courses

Serial No. 11

Teaching, and Research and Development, Experience in: Instrumental Methods of Analysis; Textile Chemistry; Organic Chemistry of Dyes; or Oils, Soaps and Detergents.

Serial No. 12 (Lecturers)

- (i) Instrument Analysis and Physical Chemistry: Electro-analytical or spectroscopic or chromatographic Methods of analysis.
- (ii) Oils, Soaps and Detergents: Extraction of Oils or Chemical Engineering
- (iii) Textile Chemistry and Dyeing and Finishing: Textile Chemistry
- (iv) Paints and Varnishes: M.Sc. (Tech.) in Paints and Varnishes
- (v) Heat Treatment: M.Sc. Engg. (Mech.) with specialisation in Heat Treatment
- (vi) Electroplating: M.Sc. Engg. (Elect.) with specialisation in Electroplating

(Teaching Research, factory experience desirable)

University Instrumentation Centre

Serial No. 13

M.Sc. in Engineering or Science; 5 years experience in R & D operation, Repair and Maintenance of Instruments.

Serial No. 14

Electronics (Certificate Course from I.T.I. with 5 years experience); or Glass Blowing or Optical Shop (10 years schooling plus 5 years experience in the trade).

Serial No. 15

Electronics (Certificate Course from I.T.I. with 2 years experience); Glass Blowing/Optical Shop (10 years schooling plus 3 years experience in the trade)

Serial No. 16

Certificate course from I.T.I. in electrical/mechanical engineering, electronics, or glass blowing; or 10 years schooling plus one year's experience in the trade.

Mohinder Singh Randhawa
REGISTRAR

Birla Institute of Technology & Science

Pilani (Rajasthan) 333031

Advt. No. 1/79/Adm.

Admissions 1979-80

The Birla Institute of Technology and Science (BITS) is an all-India Institution for men and women, fully residential and privately supported, and awards its own degrees.

A. PROGRAMMES

Admissions strictly on merit for the first semester of the academic year 1979-80 are proposed to be made on an assigned basis for the following programmes of studies :

I. Integrated First Degree Programmes

(With Practice School or without)

B.E. (Hons.) : Chemical; Civil; Electrical and Electronics; Mechanical

B. Pharm. (Hons)

M.A. (Hons.) : English; General Studies

M.M.S. : (Master of Management Studies)

M.Sc. (Hons.) : Biological Sciences; Chemistry; Economics; Mathematics; Physics

M.Sc. (Tech.) : Computer Science; Instrumentation; Museum Studies; Science & Technology Development

Desired qualifications : Senior School Certificate of the Central Board or its equivalent under the 10+2 school system with Physics, Chemistry, Mathematics and adequate English.

II. Two year Higher Degree Programmes

M.E. (Collaborative) : Project Engineering; Industrial Production; Industrial Development

Desired qualifications : Any integrated first degree of BITS or its equivalent provided certain specified courses have been done in that degree.

III. Doctoral Programmes leading to Ph.D.

Desired qualifications : Any integrated first degree of BITS or two-year higher degree of BITS, or their equivalents provided an adequate base of Physics and Ma-

thematics has been done.

B. NEW EDUCATIONAL OPPORTUNITIES AT BITS

(1) The previous five-year integrated programmes have been all restructured based on what is anticipated to be the best preparation by the new 10+2 school system of the Central Board. To determine how much time reduction from the previous five-year duration is allowable for each candidate, all candidates *after admission* has been made, will be given specially designed achievement tests.

As before, others like 11-year higher secondary, I.Sc., PUC, B.Sc., if otherwise qualified, would be processed under provisions of marginal deficiency and advanced standing. Appropriate tests *after admission* will be given in these cases also.

(2) The distinguishing educational flexibilities and other opportunities like transfer, dual degree scheme, practice school option will continue. Attention may be drawn to some new programmes which have been introduced, namely, M.Sc. (Hons.) in Economics, M.A. (Hons.) in General Studies and M.E. (Collaborative).

(3) The unique practice school scheme of the Institute has recently acquired further thrust and recognition by more professional organizations who are offering facilities not only for these but also for new type of programmes and new areas of research.

(4) The Institute proposes to extend the dual degree scheme to all students who are to be admitted in the five M.Sc. (Hons.) programmes. The assignment to the second degree would be invariably a programme which enjoys higher preference than that enjoyed by M.Sc. (Hons.) programmes, thus enabling ambitious and meritorious students to accept this challenge.

(5) The dominant theme of the three M.E. (Collaborative) pro-

grammes attempts to combine theory with practice in the setting of a professional organization. The entire two-year period of study is to be spent under the general supervision of Institute faculty and of scientists and engineers of these organizations. The challenge and rigour of these programmes are intended to demand what is best of university system along with what is best in the professional world.

Several collaborating organizations in Bombay, Calcutta, Delhi and Nagda are participating in the scheme. Each applicant after admission will be informed as to the particular organization and the town which has been assigned to him. The collaborating organization is likely to award stipends of values larger than normal M.E. scholarship and may attach certain conditions to this award.

(6) The Ph.D. programme in addition to the traditional requirement of thesis demands passing of qualifying examination, doing courses in teaching practice and successfully completing a set of required courses for those who do not possess the two-year higher degree. The area of research for thesis would be assigned by the Institute from amongst the various schools of research operating now. Any Ph.D. student of the Institute must be ready to do part or whole of his research at the various practice school stations.

An applicant to the Ph.D. programme of the Institute may after review of his application be only offered admission to one of the two-year higher degree programmes, namely, M.E. (in different engineering disciplines), M. Pharm. or M. Phil.

C. SPECIAL PROVISIONS

Admission policy attempts to tilt not only in favour of certain socially disadvantaged sections of the population but also aim to make special provision for candidates with unusual background.

(1) A public sector organization is likely to award for Scheduled Caste and Scheduled Tribe candidates special scholarships and other funds if they have latent potentiality.

(2) Candidates with high rank in their qualifying examination or those who have been awarded National Talent Scholarship would be given some consideration as in the past.

(3) Scientists and engineers who have acquired high professional competence may be given some special consideration for admission to the M.E. (Collaborative) and the Ph.D. programmes. Further, relaxation in terms of the desired qualification for such cases might be possible.

(4) In view of the multi-disciplinary nature of some of the higher level programmes of BITS, graduates of BITS with dual degree will merit some consideration.

(5) In view of the special nature of the programmes of BITS, for admission to any higher degree, graduates of BITS are likely to fit in more effectively.

(6) Persons who have no desire to acquire a degree but wish to take specific courses for updating their knowledge are given a 'casual student status' and are permitted to register in these courses on audit basis.

N.B. Consult Institute's Bulletin 1979-80.

D. APPLICATION PROCEDURE

(1) Three separate application forms are prescribed for (i) integrated first degree programmes; (ii) two-year higher degree programmes and (iii) doctoral programmes.

To obtain the application separate request for each form must be made and must be accompanied by crossed Indian postal orders for Rs. 32/- in the name of Admissions Officer payable to him at Pilani Post Office. Request

for each additional form of any kind must be accompanied by Postal orders for Rs. 32/-.

(2) Application forms, Bulletin 1979-80 and other admission materials are likely to come out of the press only by 20th May, 1979 and can be only sent after that date. All admission material will be sent by registered parcel post.

(3) The deadline for submitting the application is 5.00 P.M. on 25th June, 1979 and the deadline for submitting marksheets, if delayed, is 5.00 P.M. on 30th June, 1979 for integrated first degree programmes and 5.00 P.M. on 7th July, 1979 for two-year higher degree programmes and Ph. D. programmes.

(4) It would be in the interest of the candidate to submit the application promptly and not wait for the deadline.

ADMISSIONS OFFICER

Additions to AIU Library

- Adler, Mortimer J. and Van Doren, Charles, ed. *Great treasury of western thought: A compendium of important statements on man and his institutions by the Great Thinkers in Western History* New York, R.R. Bowker, 1977, xxv, 1771p.
- Asian Regional Seminar on the Contributions of Science and Technology to National Development, Delhi, 1978. *Proceedings*. Delhi, Indian National Science Academy, 1978. viii, 535p.
- Report*. Delhi Indian National Science Academy, 1978. 42p.
- Association of Indian Universities, Delhi. *Question bank book series. Phase II 19 Sociology*. Delhi, Author (c 1979), 440p.
- Brown, George. *Lecturing and explaining*. London, Methuen, 1978, ix, 134p.
- Chandra, Arvinda and Saxena, T.P. *Style manual: For writing theses, dissertations and papers in social sciences*. Delhi, Metropolitan, 1979, x, 227p.
- Council of Ontario Universities, Toronto. *Uncertain future: Review 1975-76 to 1977-78*. Toronto, Author, 1978. 59p.
- Dalin, Per. *Limits to educational change*. London, Macmillan, 1978. ix, 112p.
- Garforth, Francis W., ed. *John Stuart Mill on education*. London, Teachers College Press (c 1971). viii, 236p.
- Glaser, Robert, ed. *Research and development and school change*. New Jersey, Lawrence Erlbaum Associates (c 1978) xvi, 109p.
- Havelock, R.G. and Huberman, A.M. *Solving educational problems: The theory and reality of innovation in developing countries*. Paris, Unesco (c 1977) 308p.
- Hill, Brian V. *Education and the endangered individual: A critique of ten modern thinkers*. London, Teachers College Press (c 1973) xiv, 322p.
- International Association of University Presidents, Seoul. *4th conference, Boston, 1975*. Korea, Kyung Hee University Press, 1975. 453p.
- Kimball, Solon T. *Culture and the educative process: An anthropological perspective*. London, Teachers College Press (c 1974) x, 285p.
- Laudan, Larry. *Progress and its problems: Towards a theory of scientific growth*. London, Routledge and Kegan Paul, 1977. x, 257p.
- Leichter, Hope Jensen, ed. *Family as educator*. London, Teachers College Press (c 1974) vi, 129p.
- Mahbub ul Haq. *Poverty curtain: Choices for the third world*. New York, Columbia University Press (c 1976). xvii, 247p.
- Mehta, Vimla. *Attitude of educated women towards social issues*. Delhi, National, 1979. iv, 127p.
- Narayan Karan Reddy, V. *Man, education and values*. Delhi, B.R. Publishing Corporation (c 1979). xiv, 157p.
- Nettleship, Richard Lewis. *Theory of education in the Republic of Plato*. London, Teachers College Press (c 1968). xi, 144p.
- Ogilvy, James. *Many dimensional man: Decentralizing self, society and the sacred*. New York, Oxford University Press, 1977. 372p.
- Orlosky, Donald E. and Smith, B. Othanel. *Curriculum development: Issues and insights*. Chicago, Rand McNally (c 1978). xiv, 466p.
- Pusey, Mathan M. *American higher education 1945-70: A personal report*. Cambridge, Harvard University Press, 1978. 204p.
- Ravitch, Diane. *Revisionists revised: A critique of the radical attack on the schools*. New York, Basic Books (c 1978). xii, 194p.
- Reid, Ivan. *Sociological perspectives on school and education*. London, Open Books, 1977. x, 287p.
- Richards, Robert K. *Continuing medical education: Perspectives, problems, prognosis*. London, Yale University Press, 1978. viii, 214p.
- Rothenberg, Albert and Hausman, Carl R., ed. *Creativity question*. Durham, Duke University Press (c 1976). xiv, 365p.
- Sahakian, William S. *Introduction to the psychology of learning*. Chicago, Rand McNally (c 1976). xvii, 462p.
- Sahakian, William S. *Learning: systems, models, and theories*. Chicago, Rand McNally (c 1976). xv, 653p.
- Williams, Jac L. and Hughes, Gwilym Rees, ed. *History of education in Wales*. Swansea, Christopher Davies, 1978. 144p.

A list of Doctoral Theses Accepted by Indian Universities

PHYSICAL SCIENCES

Mathematics

1. Bhattacharyya, Subrata. A few problems on elastic and viscoelastic waves and vibrations. University of Kalyani.
2. Chattopadhyay, Anadikumar. Mathematical model of the propagation of waves in a shallow channel and inter-lacing channels. University of Calcutta.
3. Ghosh, Susil Kumar. Some problems in magneto-hydrodynamics. University of Kalyani.
4. Patil, Nivasrao Pandurang. Investigations on the magnetohydrodynamical aspects in general relativity. Shivaji University.
5. Pawar, Yashashri Shivaji. A study in lattice theory. Shivaji University.
6. Ray, Jayanta Kumar. Balanced and minimal cost tree structures in computer sorting and searching: A study of some algorithms. University of Calcutta.
7. Roy, Baidyanath. Some results on fixed points. University of Burdwan.
8. Santha Kumari, C. Theory of loop near-rings. Nagarjuna University.

Physics

1. Bargale, Bapu Bhau. Photoelectric properties of sodium-doped CdS films. Shivaji University.
2. Biswas, Satyabrata. Study of strong interaction at high energy. University of Kalyani.
3. Mohammed Ayub. Development of fast slow coincidence system and angular correlation studies in ^{207}Pb and ^{129}I . University of Kashmir.
4. Mukhopadhyay, Dilip Kumar. Studies on the spectrometry and impact phenomena of ions. University of Calcutta.
5. Peer, Mushtaq Ahmed. Thermal aspects of the breakdown phenomena in semiconductor devices. University of Kashmir.
6. Rajam, S. Wave interactions in piezoelectric media and solid state plasmas. University of Kerala.
7. Rajput, Kamal Singh. Solvable potentials and scattering phase-shifts in quantum mechanics. Awadhesh Pratap Singh University.
8. Samanta, Bhupal Chandra. Studies on some problems of nuclear structure and nuclear interaction. University of Burdwan.
9. Sinha, Bhabaniprasad. Some studies on correctness and optimization of microprograms and diagnosis of faults in digital systems. University of Calcutta.
10. Vaingankar, Anil Shantaram. X-ray spectroscopic studies of some ferrites. Shivaji University.
11. Zadoo, Tej Krishen. A study of some aspects of the charged particles. University of Kashmir.

Chemistry

1. Bhattacharyya, Aparna. Studies on complexes in solution. University of Kalyani.
2. Bhattacharyya, Kalyan Kumar. Synthetic approach to spiro compounds related to natural products. University of Calcutta.
3. Bhattacharyya, Sankarprasad. Approximate quantum mechanical calculation in organic molecules. University of Calcutta.
4. Chattopadhyay, Arun Kumar. Physico-chemical studies of the compounds of medicinal interest. University of Kalyani.
5. Chattopadhyaya, Gautam. Studies on the synthesis of possible anticancer agents; Synthesis of compounds related to

4(5) aminoimidazole 5(4) carboxamide of 5-aminothiazole-4-carboxamide. University of Calcutta.

6. Das, Asim Kumar. Studies on different oxidation states of cobalt complexes and their catalytic properties. University of Calcutta.
7. Ghosh, Mridula. Magnetic, NQR and dielectric studies on charge-transfer complexes. University of Calcutta.
8. Goyal, Mahesh Kumar. Kinetic study of the reactions of some linkages (C-X-P) in phosphate esters. Jiwaji University.
9. Karthikeyan, G. Studies in chemical spectroscopy; Some problems relating to the determination of the properties of molecular complexes from charge-transfer spectra. Madurai Kamaraj University.
10. Kole, Renupada. Studies on the cation exchange behaviour of synthetic aluminosilicate hydrogen. University of Calcutta.
11. Maiti, Ranjan Kumar. Complexes of oxo-cations. University of Kalyani.
12. Mane, Pratiba A. A kinetic study and mechanism of the reactions of compounds of biochemical significance. Jiwaji University.
13. Matta, Ram Prakash. Electrical effects during phase transformations; Dissolution and precipitation potentials of electrolytes. University of Kashmir.
14. Parikh, Sanatkumar Ochhavlat. Chelating polymers. M.S. University of Baroda.
15. Ray, Tapan. Chemistry of the polycyclic compounds of the Indian medicinal plant, *Machilus glaucescens* wight, family; Lauraceae. University of Calcutta.
16. Razdan, Tej Kishen. Qualitative and quantitative studies on Indian essential oils. University of Kashmir.
17. Samal Rajanikanta. Studies on high polymer systems; Kinetic of vinyl polymerisation initiated by heavy metal ion-organic substrate systems. Utkal University.
18. Sarkar, Malati. Studies in the catalysed alkylation of aromatic hydrocarbons with alicyclic lactones. University of Calcutta.
19. Satyanarayana Murthy, Rapaka Venkata. Kinetics of some vanadium(V) oxidations. Andhra University.
20. Sharma, Shiv Prasad. Kinetics of oxidation of carbonyl compounds (some ketones) by manganese (III) sulphate. Jiwaji University.
21. Varshney, Rajender Prasad. A comparative kinetic study of oxidation of unsaturated aliphatic alcohols. Jiwaji University.
22. Venugopalan Nair, S. Kinetics of solvolysis of 1-phenylneopentyl methanesulphonate and its para-substituted derivatives. University of Kerala.

BIOLOGICAL SCIENCES

Anthropology

1. Dutta, Deepanjana. Intergroup variability in respect of certain dermatoglyphic characters. Dibrugarh University.
2. Sil, Pranati. Human skeletal materials and cultural contents in ancient India: A study in spatio-temporal relationship. University of Calcutta.

Biochemistry

1. Datta, Subhaschandra. Biochemical studies on citreoviridin. University of Calcutta.
2. Sahibzada, Bashir Ahmad. A biochemical study of certain constituents of muscle and blood during disuse atrophy. University of Kashmir.
3. Talwar, Sunita. Studies on gibberellin induced enzyme release in barley seeds. Jawaharlal Nehru University.

Microbiology

1. Dandekar, Abhaya Meghshyam. Studies on the genetics of *Rhizobium Japonicum*. M.S. University of Baroda.

Botany

1. Dhar, Uppendar. Phytogeographic studies on the alpine flora of Kashmir Himalayas. University of Kashmir.
2. Gupta, Gopal Sharan. Rhizosphere mycoflora of *Oryza sativa* L. and of its associated weed *Ischaemum rugosum* Salish Morara S. Magadh University.
3. Hore, Dipak Kumar. A study on the Indian species of *Symplocos* Jacq. University of Kalyani.
4. Jeelani, Qazi Ashraf. Cytomorphology of *Potentilla*. University of Kashmir.
5. Khan, Amina. Comparative anatomy of some rosaceous genera. University of Kashmir.
6. Khan, Mohamad Ali. Limnological studies of some Kashmir Lakes. University of Kashmir.
7. Kirti, Pulugurtha Bharadwaja. Studies on the cytogenetic aspects of some spinous *Solanums*. Andhra University.
8. Koul, Veena. Cytomorphology of the genus *Iris*. University of Kashmir.
9. Munshi, Abid Hussain. Taxonomic studies in the polygonaceae of Kashmir. University of Kashmir.
10. Nag, Pratima. Characterization of heavy metal toxicity in different plant materials. University of Calcutta.
11. Naqshi, Abdul Rashid. Taxonomic studies of Kashmir Crucifers. University of Kashmir.
12. Patel, Hansaben Kuberdas. Studies on palms: 1. *Thrinax parviflora* Sw; 2. *Trachycarpus martiana* H. wendl; and 3. *Borassus flabelliferi*. South Gujarat University.
13. Phillip, K. Omana. Cytological and palynological studies on the South Indian rubiaceae. University of Kerala.
14. Ramesh, K. Bandarupalli. Cytogenetics of gamma ray and EMS induced mutants in some varieties and hybrids of rice, *Oryza sativa* (L). Andhra University.
15. Sadhu, Debiprasad. Genetical studies on root-types. University of Burdwan.
16. Sahu, Rajani Kanta. Studies on the cytogenetic hazards from agricultural chemicals. Berhampur University.
17. Seeta Rama Rao, Manchala. Embryological studies in amaranthaceae and chenopodiaceae. Andhra University.
18. Trisal, Chaman Lal. Studies on primary production in some Kashmir lakes. University of Kashmir.
19. Wafai, Bashir Ahmad. Cytoembryology of some species of the genera *Tulipa* and *Fritillaria*. University of Kashmir.

Zoology

1. Anand Prakash. Effect of some indigenous plant extracts on female reproductive organs of albino rats. Jiwaji University.
2. Dar, Habibullah. Chemical control of an orchard pest, *Mylocerus* sp., its bionomics and impact on the biotic complex. University of Kashmir.
3. Erri Babu, Dangeti. Studies on *Menippe rumphi* (Fabricius) (Crustacea: Brachyura) from Waltair Coast. Andhra University.
4. Gandhi, Anam. Studies on digenetic trematodes of birds of Visakhapatnam, Andhra Pradesh. Andhra University.
5. Ghosh, Gaurpada. Neural pattern and neurosecretory activities in some common Indian gastropods. University of Calcutta.
6. Kanase, Aruna Appasaheb. B-Glucuronidase in reproductive organs of some vertebrate seasonal breeders. Shivaji University.
7. Khan, Mohammed Ayyub Mohammed Khawja. Studies on the trematode parasites of fishes of Maharashtra. Marathwada University.
8. Koul, Ravinder Kumar. Helminth parasites of reptiles. University of Kashmir.
9. Naskar, Satyanjan. Studies on some aspects of the neuroendocrine system of adult cyclorrhaphous Diptera,

Chrysomia megacephalo, (calliphoridae). University of Calcutta.

10. Prasad, J.S. Pathogenicity and population dynamics of the root-lesion nematode, *Bratylenhus indicus* Das in rice. Utkal University.

11. Ray, Arun Kumar. Studies on the functional morphology, anatomy and histo-physiology of the digestive system in relation to food and feeding habits in some Indian fresh water perches. University of Burdwan.

12. Senthikumar, N.S. Biological and biochemical studies of some edible crabs of Saurashtra. Saurashtra University.

13. Tiwari, Laxmi Dutt. Studies on the pathophysiology of certain insects susceptible to *Bacillus thuringiensis* Beruier. Jiwaji University.

Agriculture

1. Gill, Pirthipal Singh. Response of cluster bean cultivars to phosphate, nitrogenous and bacterial fertilization in terms of growth, yield and gum production. Haryana Agricultural University.

2. Gogoi, Harendra Nath. Nutrient requirements of wheat grown in rotation with different kharif crops. Punjab Agricultural University.

3. Hajra, Subhashkumar. Genetic organization of white locus of *Drosophila Melanogaster* through recombination. University of Calcutta.

4. Inder Kumar. Role of magnesium in influencing physico-chemical properties of soils and wheat crop in relation to different qualities of irrigation water. Haryana Agricultural University.

5. Joginder Singh. Agronomic studies on seed setting of lucerne, *Medicago sativa* L. Punjab Agricultural University.

6. Khanna, Vijay Kumar. Effect of radiation on the macromolecular synthesis in germinating gram seeds, *Cicer arietinum*. Haryana Agricultural University.

7. Nehru, Suraj Singh. Search for the biochemical basis of combining ability in wheat. Haryana Agricultural University.

8. Rai, Kedar Nath. Farm income stabilization in the dry farming areas of Haryana. Haryana Agricultural University.

9. Ram Parkash. Studies on the stability of genetic parameters for the oil and yield components in sunflower, *Helianthus annuus* L. Haryana Agricultural University.

10. Rana, Om Pal Singh. Studies on phylogenetic relationship between maize (*Zea mays* L) and teosinte (*Zea mexicana* (Schrad) Kuntze. Haryana Agricultural University.

11. Rudra, Samirkumar. Study of pedological characteristic and genesis of some iron rich red and associated soils of West Bengal. University of Calcutta.

12. Sucheta. Higher classification of pentatomidae (Hemiptera: Heteroptera). Haryana Agricultural University.

13. Tripathi, Hausila Prasad. Effect of leguminous and non-leguminous forage crops fertilized with different levels of phosphorus on the nitrogen requirement of succeeding wheat crops. Haryana Agricultural University.

14. Tyagi, Anand Prakash. Genetic architecture of yield components, quality characters and their plausible biochemical basis in upland cotton, *Gossypium hirsutum* L. Haryana Agricultural University.

15. Yadav, Om Parkash. Effect of phosphorus and zinc on yield, nutrients uptake, nodulation and nitrogen fixation in gram, *Cicer arietinum* L. Haryana Agricultural University.

Veterinary Science

1. Bhattacharyya, Sankarprasad. Utilisation of industrial wastes (Biscuit factory) in the replacement of cereals in poultry feed. University of Calcutta.

2. Chakrabarti, Animeshkumar. Role of α (Alpha) and β (Beta) receptors in thermoregulation with special reference to precocial and altricial animals. University of Calcutta.

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- Hamm-Brucher, Hildegard. "Greater evil-over or under-qualification." *Forum* (Council of Europe) (3); 1978: II-III.
- Martin, Warren Bryan. "Limits to diversity." *Change* 10(11); Dec-Jan 78-79: 41-5.
- Windey, Michael. "Learning to be free". *Seminar* (235); March 79: 39-41.

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- Joshi, Ram. "Universities and national development: Linkage with environment—Educational innovation at Bombay University". *University News* 17(6); 15 Mar 79: 145-7.
- Madan, P. J. "Universities and national development: Linkage with environment". *University News* 17(5); 1 Mar 79: 121-3.
- Mukherji, Daleep. "The teacher and the society". *New Frontiers in Education* 9(1); Jan-Mar 79: 1-11.
- Paul, R. C. "Universities and national development". *University News* 17(5); 1 Mar 79: 119-20, 123.
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- Booth, David, B. "Department and chairperson development". *New Directions for Higher Education* 6(2); 1978: 71-82.
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- Hodgkinson, Harold I. "Administrators, evaluation and the stream of life." *New Directions for Higher Education* 6(2); 1978: 107-14.
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- Touchton, Judith and Sharlik Donna. "Challenging the assumptions of leadership: Women and men of the academy." *New Directions for Higher Education* 6(2); 1978: 95-106.

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- Gretler, Armin. "Eudised: Educational data bank". *Forum* (Council of Europe) (3); 1978: XIX-XX.

EVALUATION

- Burton, Nancy W. "Societal standards". *Journal of Educational Measurement* 15(4); Winter 78: 263-71.
- Gaur, R. S. "Examination and employment." *Indian Educational Review* 13(4); Oct 78: 143-8.
- Glass, Gene V. "Standards and criteria." *Journal of Educational Measurement* 15(4); Winter 78: 237-61.
- Gould, E. C. "Foreign qualifications: Evaluation and assessment—The Australian Committee on Overseas Professional Qualifications." *A.C.U. Bulletin of Current Documentation* (38); Apr 79: 2-4.

- Hambleton, Ronald K. and Eignor, Daniel R. "Guidelines for evaluating criterion—referenced tests and test manuals." *Journal of Educational Measurement* 15(4); Winter 78: 321-7.

- Levin, Henry M. "Educational performance standards: Image or substance?" *Journal of Educational Measurement* 15(4); Winter 78: 309-19.

- Linn, Robert L. Demands, cautions, and suggestions for setting standards." *Journal of Educational Measurement* 15(4); Winter 78: 301-8.

- Meyboom, W. B. "Foreign qualifications: Evaluation and assessment—The Association of Indian Universities and equivalence." *A. C. U. Bulletin of Current Documentation* (38); Apr 79: 12-14.

- Oakeslott, M. F. "Foreign qualifications: Evaluation and assessment—The National Equivalence Information Centre for the United Kingdom." *A.C.U. Bulletin of Current Documentation* (38); Apr 79: 5-7.

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ECONOMICS OF EDUCATION

- Bhandari, S. K. R. "Cost of higher education: Methodology for measurement." *University News* 17(7); 8 Apr 79: 182-5, 198.

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- Zuger, Abigail. "Birth of a doctor." *Change* 10(11); Dec-Jan 78/79: 46-55.

ADULT EDUCATION

- Adiseshiah, Malcolm S. Non-formal education for development." *Bulletin: Madras Development Seminar Series* 9(3); Mar 79: 176-9.
- Bonham, George W. "Open University: Lessons for the future (Editorial)." *Change* 10(10); Nov 78: 14-15.
- Bordia, Anil. "India's new challenge: The National Adult Education Programme." *Convergence* 11(3-4); 1978: 27-34.
- Clark, Michael. "Meeting the needs of the adult learner: Using nonformal education for social action." *Convergence* 11(3-4); 1978: 44-52.
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- Pylee, M. V. Universities and national development—Linkage with environment: University of Cochin—A case study." *University News* 17(7); 1 Apr 79: 186-9.
- Rowntree, Derek. "Technology—tool of permanent education." *Forum* (Council of Europe) (3); 1978: XV-XVI.
- Tyler, Gus. "Educating the proletariat: The University and the labour union." *Change* 11(1); Feb 79: 32-7, 64.

COMPARATIVE EDUCATION

- Jochimsen, Reimuk. "New tertiary era." *Forum* (Council of Europe) (3); 1978: XI-XII.

S.N.D.T. WOMEN'S UNIVERSITY

1, Nathibai Thackersey Road
Bombay-400 020

Applications are invited on prescribed forms available from the University Office on payment of Rs. 5 (by M.O. or cash) for the following posts to be filled in at the Premila Vithaldas Polytechnic, located at the Juhu Campus of the University. The medium of teaching is English. Applications should reach the undersigned by May 21, 1979.

I. Heads of Departments

1. Clinical Pathology & Microbiology
2. Costume Design & Fashion Co-ordination
3. Food Technology

Qualifications

Post No. 1

(a) M.D. (Pathology) or M.B.B.S. with Diploma in Pathology & Bacteriology. (b) Teaching and administrative experience of about 2 years.

Posts No. 2 & 3

(a) First or Second Class Master's Degree in the subject concerned.

(b) Either a Research degree of the doctorate standard or an outstanding competence assessed from the review of published research carried out during the five years preceding the date of the application or the published literacy or scientific work during the said period.

(c) Teaching and administrative experience of about 7 years in an institution offering applied courses like those of a Polytechnic.

(i) Conditions at (b) and (c) under I, relaxable in case persons with stipulated qualifications are not available or not considered suitable for the post.

(ii) For Post No. I (2), graduate with specialised training in India or abroad in dress making and fashion co-ordination with at least 10 years experience will also be considered.

Salary Scale: Rs. 1000-50-1500+ Admissible allowances.

For Post No. I (1) in addition to salary percentage for heading commercial laboratory negotiable.

II. LECTURER IN

A. (1) Food Analysis, (2) Food Microbiology and (3) Art (One post for each subject).

Qualifications

Post No. 1

At least second class B.Sc. Tech./M.Sc. Tech./M.Sc. (H.Sc.) Foods & Nutrition.

Post No. 2

At least M.Sc. second class with Microbiology and specialisation in Food Microbiology.

Post No. 3

G.D. (Art) Drawing & Painting or Commercial Art from Government of Maharashtra or a Master's Degree of a recognised University.

Salary Scales: Rs. 680-40-1000-50-1250+admissible allowances.

B. (1) Commercial & Secretarial Practice, (2) Chemistry, (3) English, and (4) Anatomy Physiology (One post for each subject).

Qualifications

Post No. 1

At least second class M.Com.

Post No. 2

At least M.Sc. II Class with Chemistry

Post No. 3

At least II Class Master's Degree in English.

Post No. 4

At least a M.B.B.S. or II Class M.Sc. with Physiology.

(Persons with teaching experience of 2-3 years will be preferred)

Salary Scale: Rs. 600-30-750-950+admissible allowances.

III. (A) ASSISTANT LECTURER IN

(1) Drafting, Sewing & Construction: Two posts

(2) Dyeing and Weaving: One post

(B) INSTRUCTOR IN

Shorthand & Typing: One post

Qualifications

Post No. 1

At least II Class Master's Degree in Textiles & Clothing with knowledge of Tailoring or Diploma from a recognised institution in Tailoring. The qualification requirement relaxable in case of persons with at least 10 years experience or persons who have achieved excellence in the field.

Post No. 2

Diploma in Weaving Printing/Dyeing

from a recognised institution with 2 years experience.

Post No. III (B)

Graduate with G.C.C. certificate in typing and shorthand with two years experience.

Salary Scale: Rs. 500-20-700-25-900+admissible allowances.

IV. OTHER POSTS

1. Catalogue Assistant: One post

Qualifications

II class graduate (preferably in Science) and Diploma or Degree in Library Science with some experience.

Salary Scale: Rs. 290-10-390-15-465-EB-15-540+admissible allowances.

2. Accounts Clerk: One Post

Qualifications

B.Com. (Advanced Accounts with knowledge of typing) and some experience.

Salary Scale: Rs. 260-10-390-15-420-Extn-15-450+admissible allowances.

Note

(a) Only suitable candidates will be called for interview

(b) Other things being equal preference will be given to candidates from Scheduled Castes/Scheduled Tribes/Other Backward Communities.

(c) Higher starting salary may be considered in exceptional cases.

(d) Job specifications for posts under (I) be collected with application forms.

(Smt.) Kamalini H. Bansali
REGISTRAR

GUJARAT AGRICULTURAL UNIVERSITY

SARDARKRISHINAGAR-385506

Advt. 1/79

Applications are invited in the prescribed forms for the following posts in the Gujarat Agricultural University.

Posts & Pay Scales	Discipline
1. Professors/Research Scientist Rs. 1500-60-1800-100-2000-125/2-2500.	Agronomy, Plant Breeding, Nematology, Biochemistry, Horticulture, Plant Pathology, Cytogenetics.
2. Associate Professor/Associate Research Scientist. Rs. 1200-50-1300-60-1600-Assessment-60-1900.	Agronomy, Crop Production, Plant Protection, Plant Physiology, Biochemistry, Horticulture, Animal Genetics & Breeding, Dairy Technology, Dairy Chemistry, Dairy Microbiology, Dairy Engineering, Agricultural Engineering.

Application forms and other details regarding qualifications and experience can be had from the Registrar, Gujarat Agricultural University, Sardarkrishinagar-385506. Dantiwada, Dist. Banaskantha on cash payment of Rs. 2/- or by sending crossed Indian Postal Order of equal amount issued in favour of Chief Accounts Officer, Gujarat Agricultural University, Sardarkrishinagar alongwith the self addressed envelope (23 cm x 11 cm) affixed with 50 paise postage stamps. The minimum qualification for all the posts is Ph.D.

The candidates already in the services of this University may apply through their respective officers on plain paper. All candidates called for interview will have to attend the same at their own cost.

Last date for receiving the application forms complete in all respects is 31.5.1979.

M.P. Vaishnav
REGISTRAR

University News

A FORTNIGHTLY CHRONICLE OF HIGHER EDUCATION & RESEARCH JUNE 1, 1979



Dr. C. R. Mitra, President, A.I.U., arriving to inaugurate the Sports Management Course at the Indian Institute of Technology, New Delhi.

UNIVERSITY OF JABALPUR JABALPUR

Advertisement

NO. ESTT./79/6392

Applications are invited on plain paper for the following posts in the scales shown against each with benefits of dearness allowance, Contributory Provident Fund and other allowances as may be admissible under the University rules, viz:

1. Reader: 4

One for Physical Chemistry
One for Organic Chemistry
One for History (with specialization in Ancient Indian History).
One for Sociology.
Pay Scale: Rs. 1100-50-1600.

2. Lecturer: 2

For Hindi.
Pay Scale:- Rs. 620-40-900-50-1400.

Essential Minimum Qualifications For Readers

(a) (i) A doctor's degree or published work of an equivalent high standard; and

(b) (i) A 2nd Class Master's degree in a relevant subject with at least 50% marks (B in the seven point scale) or an equivalent degree of foreign University; and

N.B.: While taking into account the marks/grade, the marks/grade obtained in Internal assessment, if any, shall be excluded.

(ii) At least 50% marks at the Bachelor's degree examination on the basis of which division is awarded at the degree level by the University; and

(iii) At least 50% marks at the Higher Secondary / Intermediate / Pre-University Examination, as the case may be;

and

(c) (i): The experience of teaching post-graduate classes for at least 5 years; and

(ii) At least three years experience of guiding research.

For Lecturers

(a) (i): A doctor's degree or published research work of an equivalent high standard; and

(b) (i) A second class Master's degree in a relevant subject with at least 50% marks (B in the seven point scale) or an equivalent degree of a foreign University; and

N.B.: (While taking into account the marks/grade, the marks/grade obtained in internal assessment, if any, shall be excluded).

(ii) At least 50% marks at the Bachelor's degree examination on the basis of which division is awarded at the degree level by the University; and

(iii) At least 50% marks at the Higher Secondary / Intermediate/Pre-University Examination, as the case may be.

Having regard to the need for developing inter disciplinary programmes the degree in (a)(i) and (b)(i) above may be in relevant subjects.

N.B.: (i) The requirement regarding minimum percentage of marks shall be

relaxed upto 5% in case of Scheduled Caste/Scheduled Tribe candidates.

(ii) The posts of Lecturers in Hindi, Reader in History and one Reader in Physical Chemistry are temporary for the present.

Qualifications are relaxable in cases of candidates of exceptional merit. Names of eminent persons distinguished in Scholarships who do not apply may also be considered for selection. The candidates in their applications should give details of their 'Specialization' if any. Canvassing in any form by or on behalf of the candidate will disqualify him.

The applications showing the details of qualifications stated above along with the information regarding the proof of the date of birth and past experience accompanied with a Postal Order for Rs. 5/- in the name of the undersigned should reach here not later than 11th June 1979. The Candidates already in employment at present, should send their applications through proper channel.

R. N. Tripathi
REGISTRAR

MAHARSHI DAYANAND UNIVERSITY

ROHTAK

Invited applications (through proper channel) for **TEACHING POSTS:**

Professor: Sanskrit.

Readers in: Commerce, English, Economics, M.B.A. History and Sociology.

Lecturers in: Physics, Chemistry, Hindi, M.B.A., Mathematics, Commerce, Journalism and English.

University Evening College: Lecturer in Mathematics with specialisation in Statistics.

QUALIFICATIONS

(i) **Professor:** Very good academic record, Doctoral Degree, experience of guiding research, ten years teaching experience of post-graduate classes about 5 years as Reader.

(ii) **Readers:** Very good academic record, Doctoral Degree, at least 5 years experience of teaching post-graduate classes.

(iii) **Lecturers:** Good academic record, Doctoral Degree or high standard research work. **For Journalism:** Good academic record, preferably M.A. in English or other Social Science, degree/diploma in Journalism. Preference for experienced candidates.

Required specialisations

Readers in Commerce: Accounts/Management/Corporate Laws.

Readers in Economics: Advanced Economic Theory/Mathematical Economics/History of Economic Thought/Agricultural Economics.

Lecturers in Chemistry: One each in Physical, Organic and Inorganic Chemistry.

Lecturers in M.B.A.: Any Functional area preferably in Marketing/Finance and Managerial Economics.

Lecturers in Mathematics: Applied Mathematics/Statistics.

NON-TEACHING POSTS

Assistant Registrars: 700-40-900/40-1100-50-1300. Required atleast a good Bachelor's Degree, 5 years experience as Superintendent in a University or 5 years experience as Lecturer in a well-established college.

Superintendents: 500-30-740/40-900. Atleast Bachelor's Degree and 5 years experience as Assistant/Dy. Superintendent in a University or Government or Semi-Government Departments.

Micro Analyst: 400-40-800-50-950. At least high second class Master's Degree in Chemistry / Analytical Chemistry/Handling of Sophisticated Instruments or a First Class B.Sc. with ten years experience as Micro Analyst in post-graduate Chemistry Department/Research Institute.

Technician: 250-15-400-20-500. Higher Secondary with Degree/Diploma in Electronics or Electrical Engineering, minimum 5 years experience of handling, repairing, maintenance and fabrication of Electronic/teaching or research laboratory equipments. Science graduates with Physics as one of the subjects to be preferred, other things being equal.

Senior Scale Stenographers English: 225-15-360/25-500. Good Bachelor's Degree, 100 w.p.m., capacity to transcribe 20 w.p.m..

Senior Gas Man: 145-7-180/12-300. A Good Matriculate with Science possessing 5 year independent experience of handling gas plant in Chemistry Department or a science graduate, with experience.

Head Laboratory Assistant: 145-7-180/12-300. Good class Matriculate with Science. 5 years experience as Laboratory Assistant. Science graduates will be preferred.

Laboratory Assistant: 100-5-200. Good Matriculate with Science and three years experience in Chemistry Laboratory. Science graduates will be preferred.

U.G.C. Pay Scales for all categories of teaching posts, with usual allowances and benefit of Contributory Provident Fund. Reservation for Ex-servicemen/B.C./S.C./S.T. candidates as per rules and no application fee from them.

Qualifications relaxable and higher start admissible in deserving cases and internal candidates. Knowledge of Hindi essential for all posts. Number of posts indeterminate but liable to be increased or decreased.

Applications with full bio-data, attested testimonials and crossed Postal Order(s) for Rs. 5/- for posts carrying basic pay of less than Rs. 300/- and Rs. 10/- for posts carrying higher basic pay, in favour of Chief Accounts Officer, payable at Post Office, Rohtak be sent to Registrar by 8.6.1979.

REGISTRAR

UNIVERSITY NEWS

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JUNE 1
1979

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Draft National Policy on Education 1979

Preamble

1.1. An ideal system of education should enable individuals to know and develop to the fullest, their physical and intellectual potentialities and promote their awareness of social and human values, so that they can develop a strong character and live better lives and function as responsible members of the society. It is by transforming the human being that social transformation can be brought about.

Aim

1.2. The aim of education should be the growth of the individual through truthful life without detriment to the welfare and progress of society and our cherished ideals of freedom, equality and social justice. To this end it should strengthen values of democracy, secularism and socialism. Education should promote national unity, pride in our cultural heritage, and faith in the country's future. The effort must be to inculcate scientific and moral values and to facilitate pursuit of knowledge.

Content

1.3. The content of education at all levels needs to be recast so as to make the education process functional in relation to the felt needs and potentialities of the people. Emphasis should shift from teaching to learning, the role of the learner being more crucial. Gandhiji's ideas and experiments in the matter of education, his introspective approach to all learning, his insistence on the co-relation of hand and heart leading to complementarity of intellectual and manual work and on the social responsibilities of education have enduring relevance and are therefore vitally necessary and useful. Community service and participation in constructive and socially useful productive work should be an integral part of education at all stages so as to foster self-reliance and the dignity of labour. Moral education should form part of the content through inter-related curricular and co-curricular programmes in all subjects and should be the responsibility of all teachers and the entire institution. The content should also include the lives and teachings of great national leaders and the history of freedom movement.

System

1.4. The present system of education must be reorganised in the light of contemporary Indian realities and requirements. Subject to the nationally agreed basic concepts of freedom, equality and justice, the system should be flexible and responsive to varying circumstances. Every effort should be made to pursue excellence, without losing sight of the ideal of equality. The system must endeavour to narrow the gulf between the educated classes and the masses and overcome feelings of superiority, inferiority and alienation. With flexibility in the choice, content and duration of courses, the student can choose his own time and channel of study and progress at his own pace. The educational institutions and the community should help each other, the teachers and parents cooperating in providing knowledge and skills and a better future for the children. The school should be closely associated with the development activities of the area.

2. UNIVERSAL ELEMENTARY EDUCATION

Elementary Education for All

2.1. Highest priority must be given to free education for all up to the age of 14 as laid down in the Directive Principles of the Constitution. Education up to this stage should be general and not specialized and should give pupils a confident command of language and tool

Document as presented by the Ministry of Education & Social Welfare, Government of India, to the Parliament

subjects and inculcate a scientific attitude. Elementary education should be an integral stage.

Objective and Content of Elementary Education

2.2. The accent in elementary education should be on the development of personality and character. The content of elementary education needs to be restructured keeping in view not only the tradition and values that make up the country's composite culture but also the present realities and the vision of a common future. The content of education at this stage should include language, arithmetic, history, simple elementary sciences with special reference to environment, cultural values and physical education. The curriculum should necessarily include socially useful productive work through purposive manual labour contributing towards goods and services useful to the community. Wherever possible, provision must be made for agricultural or horticultural activity. Thus education will become functional and related to the lives of the people and the environment. It should promote a scientific temper which results in a capacity for self-criticism and a liberal and human outlook. Flexibility and room for innovation will help the teachers to meet the varying requirements of children.

2.3. There is need for a change in the approach to the learning process in the early years of elementary education. The accent has to be on more creative and joyful activities than formal instruction. Formal instruction must be reduced to the minimum and should not exceed three hours a day. No rigid academic year need be prescribed. The school session should be scheduled according to local needs.

Facilities for Elementary Education

2.4. While it is necessary to expand the facilities for formal education in elementary school for all children in the age group 6-14, it is also important to formulate schemes of non-formal education for dropouts and the older children in the age group who have not had any schooling. The aim should be to cover all the children in the age group 6-14 in the next ten years. Steps should be taken to prevent children giving up schooling without completing the course. The problem of wastage should be studied in detail and remedial measures taken.

2.5. The curriculum must be capable of catering to the requirements of a wide range of learners and learning circumstances and built around local situations. There has to be a core of basic content for comparability of educational attainment and the acquisition of further skills and knowledge. The core should be minimum. Learning system may be organized through either formal or non-formal arrangements, which may be partly institutional and partly personal. The institutional arrangements should not be so rigid as to exclude those learners who wish to make use of them partially.

Incentives

2.6. Incentives such as mid-day meals, free textbooks, stationery and uniforms should be provided to poorer pupils. Special attention should be given

to the education of girls and children of Scheduled Castes and Scheduled Tribes.

School and the Community

2.7. The school should function as a focal centre for the development of the neighbourhood. The community in its turn should involve itself in the educational effort. Skills available within the community should be utilised for education programmes in the school.

Common School System

2.8. Beginning with the elementary stage, steps should be taken towards the common school system. The effort should be to provide education of good quality. It should be ensured that in all schools, the medium of instruction is the regional language and fees and rules of admission are uniform.

Neighbourhood School Plan

2.9. The neighbourhood school plan will be the main feature of the common school system by which the schools in the area will be required to enrol all the children in the neighbourhood. This will promote common interests and social integration.

3. ADULT EDUCATION

Need for Adult Education

3.1. It is estimated that 230 millions of our adult population are illiterate. These form mostly the poorest and the most neglected sections of the nation. Their contribution to national well-being could be far greater than it is, if they received some education. Their condition is such that they are not able to take advantage of the benefits available to them under the development plans and continue to be exposed to exploitation and social disabilities. The nation should deem it its solemn duty to impart education to them. The National Adult Education Programme, which has been organised, should be implemented with urgency and sustained vigour. The immediate target should be to educate under this programme 100 millions in a period of five years so that universal literacy becomes a reality in our country within the shortest possible time.

Concept

The Adult Education Programme should mean not only acquisition of literacy and numeracy, but also functional development and social awareness with a view to cultivating the habit of self-education.

Revised Minimum Need Programme

3.2. Adult Education is an integral part of the Revised Minimum Needs Programme (RMNP) whose thrust is (a) to reach to the poor people, (b) to coordinate all such programmes with developmental departments, and (c) to integrate them with area planning. The RMNP programmes, including Adult Education, cannot be the sole responsibility of one Ministry, department or agency.

Agencies

3.3. Since this massive programme stipulates a

large investment, its operational content has to be carefully worked out. The most important point to be kept in view is that the programme is community-oriented. Agencies and instruments for this programme have to be so identified that the maximum interaction takes place between the local community and the Government.

3.4. The programme will be conducted through multiple agencies with precedence to voluntary agencies in so far as they are available. The involvement of teachers, students, trade, industry, youth and women organisations, social workers, developmental departments, municipalities, panchayats and other local bodies will be ensured right from the beginning.

Emphasis on Rural Areas

3.5. Since the real problem of adult illiteracy exists in the rural areas, special efforts will have to be made to involve the rural community and the teachers in the rural areas to conduct this programme. A special effort should be made to activate Mahila Mandals and Youth Organisations. Some input from the community would be desirable to make it a continuing programme.

Women Instructors

3.6. Since the programme is not only meant for removing illiteracy alone but its aim is also to create awareness about other problems, it would be desirable that such programmes as family planning, health and nutrition, child and mother care should be built into this programme. For this it would be desirable that the newly appointed instructors for this programme should be women as far as is possible.

Skill Development

3.7. Besides removing illiteracy and creating awareness, adult education programme has to have some developmental content. It should also aim at improving the skills of the targeted groups so that their productivity can be improved. For this, institutions of vocational education should be pressed into service.

Post Literacy Programmes

3.8. The adult education programme should include measures for continuing education to sustain the interest of those adults who have taken advantage of it and to enable them to develop knowledge and skills on their own. These measures would include low-priced books and literature, village libraries, material put out through the mass media etc. The development of a rural library system is necessary to support the programme of continuing education.

4. SECONDARY EDUCATION

Improving Quality of Secondary Education

4.1. While the highest priority has to be given to the expansion of elementary education and promotion of adult education, it is equally important to improve secondary education so that on leaving the schools a student can enter life with self-reliance and confidence and take up work well equipped with general knowledge and relevant skills.

Diversification and Lightening of Academic Load

4.2. The curriculum of the secondary education should be diversified and its burden made lighter by shedding excess academic load so as to facilitate and help the development of the total personality. The curricular and co-curricular programmes, physical education, games, socially useful productive work and social service should be designed to help students acquire the knowledge and skills, attitudes and values essential to a democratic, secular and socialist society with Gandhian values of life.

4.3. Diversification of education programme should take note of the pattern of diversified decentralized economy in rural areas where the accent is on rural industrialization, minor irrigation, rural health, rural electrification, rural housing and other programmes of rural development.

Role of Secondary Education

4.4. The entire educational system has to be seen as one chain. The central link in this chain is that of secondary education because it is through this that backward and forward linkages are established. Elementary education has to be so structured as to strengthen the foundations of secondary education and secondary education has to be so structured that students can be sufficiently equipped both in knowledge and skills to straightway join any part of economic life. Secondary education should be comprehensive both to be terminal for those who do not want or cannot proceed for further education, and to have a strong academic foundation for higher studies for those who show intelligence and aptitude for that education. Besides, the system should be so evolved that the students can opt out of one stream to the other as and when they desire.

Vocational Education

4.5. However, both streams in secondary education should have strong vocational component in the curricula and should be diversified to satisfy the needs of both the abovementioned streams. Obviously, for terminal secondary education vocationalization would have much larger component than for the other stream. Foundations for vocationalization of secondary education will have to be laid even earlier through socially useful productive work with accent on practical work becoming an integral component of elementary school curriculum.

4.6. The vocational education spectrum will consist of a range of knowledge and skills, training in technologies, together with a study of the related sciences, farming and other practical work. For this purpose a systematic linkage should be established with the facilities available in the neighbourhood. The objective should be to give students fitness for employment or a capacity for self-employment.

4.7. Introduction of programmes of vocationalization would have to be preceded by surveys which would indicate broad and qualitative assessment of emerging employment opportunities which are local specific. Such surveys and assessments should be periodic so that vocationalization programmes are reviewed, modified and changed from time to time.

4.8. Vocationalization programme, by its very nature, will have to involve all development departments. However, there is need for one coordinated agency to look after various aspects of the programme like programme information, development of course content, standards of achievement, liaison with employment agencies, identification of institutional courses, etc.

4.9. Efforts should be made to provide for vocational courses and opportunities for vertical and horizontal mobility through the provision of appropriate diploma and certificate courses through non-formal methods. The products of vocational courses should have opportunities for upward professional mobility.

4.10. Vocationalization for self-employment should reckon with the need for supplementary inputs like credit, market, etc. and should also aim at extending the scope of possibilities of effective tie-up with the district industrial centres and other institutions being set up in the country. The student completing the existing vocational courses should be given due recognition. To promote vocationalization, apprenticeship schemes should be extended to those courses also.

Community Involvement

4.11. The School and the community will have to be brought together. Involvement of the community in identifying the kinds of programmes and courses and provision of facilities by them in their enterprises and establishments will ensure success of the programme. This will also, among other things, throw up work opportunities for self-employment.

4.12. In view of the decentralization of economic planning where the thrust is on area development with improving the lot of individual families, the programme of vocationalization has to be decentralized and local bodies and communities involved in its formulation and implementation.

Expansion of Secondary Education

4.13. Facilities for secondary education will have to be expanded in rural areas and the smaller towns in order to reduce the gap between rural and the urban population. Special efforts will be made to provide access to the weaker sections. Access may also be enlarged by the introduction of correspondence part-time and own-time courses of study and by allowing private candidates to appear in public examinations.

5. HIGHER EDUCATION

Importance

5.1. Though priority must be given to elementary and adult education and the improvement of secondary education, the importance of the role and contribution of higher education in national development must be fully recognised.

Relieving Pressure on Higher Education

5.2. The proliferation of colleges and universities with little regard to the need for them or the resources required for sustaining them at acceptable stan-

dards is a matter for concern. Measures will have to be devised to relieve pressure on higher education. Vocationalization of Secondary education should help in this process. New recruitment policies and procedures within built pre-service training programmes and tests appropriate to specific job requirements, will also help to lessen the craze for degrees for securing jobs. The general run of jobs not requiring university education for their performance, should be de-linked from the requirement of a degree.

Facilities for Higher Education

5.3. Facilities for higher education may be expanded through correspondence courses, part-time and own-time studies and by permitting private candidates to appear in university examinations. Great restraint should be exercised in the establishment of new institutions. Admission to institutions of higher learning should be selective. Due safeguards, however, have to be provided to ensure accessibility of these institutions to first generation learners, scheduled castes and scheduled tribes and other disadvantaged groups. Vigorous efforts should be made to improve the quality of higher education.

Under-Graduate Education

5.4. It is preferable that the duration of the under-graduate stage of higher education is three years. This may be followed by courses of post-graduate study and research. Courses of study will be re-structured and made inter-disciplinary so that they can meet the varying requirements of students and also help in social transformation and national development. Participation in constructive programmes with a component of socially useful productive work should be made an integral part of the courses of study at the under-graduate stage.

Research

5.5. Efforts will be made to raise the quality of post-graduate education. Universities will be encouraged to undertake fundamental and applied research especially in sciences relevant to the needs of national development in collaboration with national research laboratories, industry and other organisations. The programmes of scientific and technological research should conform to the National Policy on Science and Technology.

Extension Programmes Linking Community with the Education System

5.6. The university system should assume increasing responsibilities for the development of the community and more particularly for the education system as a whole. The universities should collaborate with the colleges which in turn may work with secondary and elementary schools in the neighbourhood and the entire complex should help to improve the standards of education at all levels. There should be close relationship of mutual services and support between the universities and colleges and the local community. Extension programmes in the universities should have the same status as teaching and research. Vacations should, where necessary, be curtailed and

re-scheduled to enable students and teachers to lend a hand in programmes of rural and community development.

Centres of Excellence

5.7. Centres of Excellence, whose standards should be comparable to the best in the world, are essential and every effort will be made to promote them.

6. STRUCTURE OF EDUCATION

6.1. The educational structure will broadly comprise elementary, secondary and under-graduate stages of education. School education shall be of 12 years' duration and will comprise the elementary and secondary stages. There will be a public examination at the end of the secondary education. The under-graduate stage of education may be of 3 years' duration. However, where a university desires, it can have 2 years' pass and 3 years' honours course.

7. TECHNICAL EDUCATION

Manpower Needs and Technical Education

7.1. In the area of technical education, an efficient national manpower information system is necessary, which should be developed within the next five years. In view of the changed priorities of socio-economic development, a more balanced technical education system at all stages should be organised. The programme of technical education should be on a more efficient and meaningful basis.

Restructuring of Courses

7.2. Technical education institutions, especially polytechnics, will form the focal points where problems of rural areas will be studied and solutions found. Programmes will be designed to ensure meaningful interaction and collaboration with industry. Laboratories and workshops should be strengthened and the quality of training should be improved. Technical education courses should be designed also to impart entrepreneurial skills. Courses in management education should be restructured to provide for managerial manpower for villages, small and medium-sized industries and also for sectoral needs such as transport, power, health, agriculture, cooperation and rural development. Appropriate courses in humanities and social studies should be provided in technical education institutions to promote a sound value system.

7.3. In view of the fact that the country has already achieved a highly diversified industrial structure, both in public and private sector, industries should play a larger role in maintaining a balance system of technical education and in the optimum utilization of technical manpower in the building up of a research and development base.

Research

7.4. Emphasis in research will be on industrial and rural development. Institutions will be expected to undertake advanced research in areas of vital importance to the nation, such as energy resources and technology for rural development.

8. AGRICULTURE EDUCATION

Courses of Study

8.1. Facilities for agricultural education should be expanded to meet the requirements of all states and should emphasize self-employment through diverse agricultural operations. Agricultural Universities wherever they exist should have state-wide responsibility for research in agriculture and allied areas. Every agricultural University should have one strong centre of research in each agro-climatic region to do location-specific research. Agricultural Universities should also conduct advanced studies and basic research relevant to agricultural development. Agriculture Departments and faculties of other universities which have the necessary potential should also be assisted to develop complementary programmes of agriculture education.

Linkage

8.2. Linkages should be developed between Agricultural Universities and development departments to facilitate the transfer of new technology to villages. Agricultural Universities should also actively pursue programmes of non-formal education, including correspondence courses for continuing education to meet the functional requirements of the rural community.

Krishi Vigyan Kendras

8.3. Agricultural Universities as well as suitable voluntary agencies should organize and run Krishi Vigyan Kendras to impart training to rural youth in relevant skills and also participate in programmes of adult education.

9. MEDICAL EDUCATION

9.1. In the field of medical education, the type of education imparted, particularly at the under-graduate level, is hospital-oriented and has little relevance to the actual overall health care needs of the country. As a result, while the modern medical system has, to a large extent, kept pace with the developments in the rest of the world, yet the graduates coming out of our medical colleges are unable to appreciate adequately the problems of the community and handle the problems and dilemmas at that level. Our medical education system, therefore, needs to be reorganised on a realistic assessment of the health manpower requirements of the country. Towards this end, the system has to be reoriented to bring it in tune with the needs and aspirations of the community.

9.2. At the same time, the indigenous (traditional systems of medicine) like Ayurved, Unani, Siddha, Yoga, Naturopathy and also Homeopathy have, after years of comparative neglect, started coming into their own. It is essential from the point of view of optimal utilisation of national resources that all these systems, as well as the modern system, should realise their limits as well as potential, should support each other mutually, and draw inspiration from one another.

10. CULTURE

Linkage Culture and Education

10.1. A positive effort has to be made to ensure the integration of traditional and contemporary cul-

tural elements with formal and non-formal education. The education system has so far not made full use of the rich and varied cultural heritage of the country and the vast cultural resources available in communities which are socially and economically backward. All these resources should be drawn upon and woven into the fabric of education at all stages

11. PHYSICAL EDUCATION

Physical Education as an Integral Part of Education

11.1. Physical education, consisting of sports and games and athletics, including rural sports, indigenous games, yoga exercises and activities promoting a spirit of adventure, should form part of education at various levels. Efforts should be made to locate talent among boys and girls and facilities should be provided to enable them to develop their capacities and attain national and international standards of excellence, in sports. Practical knowledge for maintaining one's health and physical fitness should be given at all stages.

12. MEDIUM OF INSTRUCTION

Medium and Language Study

12.1. The medium of instruction at all stages shall be the regional language except at the primary stage where it will be the mother-tongue,

12.2. Facilities will be provided in schools for teaching English or a foreign language so that pupils can have direct access to specialized and growing knowledge in the world in their chosen fields.

13. THREE LANGUAGE FORMULA

13.1. The Three Language Formula will be implemented at the secondary stage. It includes the study of a modern Indian language, preferably a South Indian Language, in addition to Hindi and English in the Hindi speaking states and of Hindi in addition to the regional language and English in non-Hindi speaking states.

14. DEVELOPMENT OF LANGUAGES

14.1. Efforts will be made to improve the techniques of teaching languages.

14.2. Efforts will be continued and strengthened to develop Indian Languages and Literature.

14.3. Sanskrit has influenced in one way or another most of the Modern Indian Languages. Efforts will be made to popularise the study of Sanskrit.

14.4. Study of other classical languages will be promoted.

14.5. Programmes to promote the development and propagation of Hindi as a link language will be strengthened.

14.6. The study of Urdu will be accorded due recognition and encouragement.

14.7. The study of Sindhi will also be promoted.

15. EXAMINATION REFORM

Place of Examinations

15.1. Examinations, especially public exami-

nations, should be made more objective and reliable. Evaluation should enable the teacher to see the effectiveness of his instruction and enable the pupils to judge the results of their learning efforts. It should thus act as an instrument of improving both the teaching and learning processes including the content of courses and methods of teaching.

15.2. The mode of evaluation should discourage memorization and should be comprehensive enough to cover the total learning experience in the curricular and co-curricular programmes.

Public Examinations

15.3. Generally, there should be not more than three public examinations during the entire course of education till the end of undergraduate stage. These may be at the end of elementary, secondary and the under-graduate stages.

Internal Evaluation

15.4. All other examinations should be internal. Besides the annual examinations there must be regular periodical tests to evaluate the progress of students. A regular system of sessional evaluation should be followed so as to identify the pupils lagging behind and needing special attention.

Credit System

15.5. We must gradually provide for the credit system which facilitates multi-point entry and promotes an open learning system.

16. BOOK DEVELOPMENT

Text Books

16.1. Efforts will be made to improve the quality and content of textbooks and to make them available at reasonable prices. The States and Universities will be assisted to produce books and periodicals and other reference material in regional languages to facilitate the medium change-over.

17. EDUCATIONAL OPPORTUNITIES

Problems of Disadvantaged Sections

17.1. While there has been considerable expansion in all sectors of education in our country, imbalances and inequalities still persist. Girls, Scheduled Castes and Tribes, landless labourers, backward classes and urban slum poor generally continue to lag behind in education. Special effort must be made to identify the problems in these cases and to bring all such people into the fold of education.

Talent Search

17.2. Scholarships and fellowships based on merit-cum-means should be expanded at different levels of education. Some of these should be earmarked for rural and backward areas and weaker sections, to ensure that talented students from the weaker sections of the population are identified and helped to acquire good quality education.

Monitoring

17.3. Close monitoring of programmes intended for the disadvantaged classes will be undertaken at the State and national levels at all stages of educa-

tion so that they may be enabled to reach levels attained by other sections of the population, within the next decade.

Pre-School Education

17.4. Pre-School education for children of first generation learning should be provided through existing schools system.

Public Schools

17.5. Some schools, notably 'public schools' remain outside the system of public education. They should be brought under the purview of the laws and regulation that govern the system of public education especially those relating to fees and content of courses. They must have regional language as the medium of education and uniform fees and rules of admission. These institutions should be integrated with the common school system of education with its neighbourhood plan. The Special rights of institutions administered by minorities will be given due recognition.

Regional Imbalances

17.6. Certain States lag behind the rest of India in education. The centre and states concerned must make special efforts to bring them on par with the other states in education generally and more particularly in universalisation of literacy within the shortest possible time. It has been observed that educational development even within one and the same state is not uniform. Hence, close monitoring will be introduced during the next Plan period, and emphasis will be laid on area planning to ensure that all relatively backward pockets are assisted to raise their standards.

Education for the Handicapped

17.7. Every effort should be made to expand educational opportunities to cover all handicapped children. For the more severely handicapped children, education may be provided in especially suitable setting for the full development of their potential. The others could be placed in regular schools and provided with the requisite additional facilities. Appropriate curricula and techniques of teaching suited for handicapped children should be evolved through research and through study of techniques adopted elsewhere.

18. TEACHERS

Role of Teachers

18.1. Teachers have to play a pivotal role in reforming education at all levels. In order that they can play this role they should be inspired by creative idealism and feel pride in their professions. Suitable steps should be taken to improve professional competence of teachers at all levels. The academic freedom of teachers to conduct research and make experiments and innovations will be assured.

18.2. The teaching community should become increasingly aware of the crucial importance of their role in moulding the lives and character of the future citizens of the country. They should themselves be model citizens, committed to the task of national and social reconstruction.

Teacher Education

8.3. The curriculum of teacher-education at the

elementary and secondary stages, will be suitably changed in order to enable the teachers to play their proper role in reforming education. Pedagogical and professional preparations for teachers in higher education should also be provided. Facilities for inservice training will be expanded. Centres for developing curricular material and teaching aids will be established, especially for the benefit of teachers in rural areas and for both formal and non-formal systems of education.

19. COMMUNITY PARTICIPATION

Local Community Participation

19.1. It is desirable to associate the local community with the schools in the area through the setting up of local committees which will improve the facilities in the institutions and help them to function more efficiently.

20. VOLUNTARY ORGANISATIONS

20.1. Voluntary organisations will be encouraged to support and supplement the programme formulated to implement the national policy.

21. EDUCATION OF MINORITIES

21.1. Government are aware of the valuable contribution to the country's composite culture that can be made by institutions run by religious and linguistic minorities and recognize and uphold their right to establish such educational institutions of their choice and administer them in accordance with law, in order that the goal of an integrated Indian Community is achieved.

22. INVESTMENT IN EDUCATION

22.1. Government expenditure on education in the country has steadily grown and is now of the order of 2800 crore Rupees per annum. A larger outlay will be needed to implement the policy outlined above. However, efforts must be made to realise the objectives through exercise of economy, more effective utilisation of existing resources, additional outlays and programmes such as "Food for work".

22.2. Fees may be charged in secondary and higher education stages from those sections of population who are in a position to pay at rates which bear a reasonable relationship to the cost of providing education.

22.3. Support from local communities in cash and kind should also be encouraged on a wider scale than is done at present.

22.4. While financial inputs are an important part of the total effort required to implement the policy, even more important will be the human element, the intellectual and moral energy dedicated to the task. Without this human contribution, the transformation and expansion of the education system on the above lines and improvement of its quality will not be possible.

23. REVIEW

23.1. The Government of India will review every five years the implementation of the National Policy on Education and modify it in the light of experience. □

Universities and National Development

—Linkage with Environment

A. S. Atwal*

The quality of environment is now-a-days engaging the attention of the people all over the world. The environmental problems are those conditions in the bio-physical environment which have an adverse influence on the health and happiness of man. There are many instances to show that the environmental problems reached the crisis phase in the advanced countries. Environmental problems in India differ from those faced by the industrially advanced countries.

The process of human problem solving passes through three phases:

- (i) To create awareness that the problem exists.
- (ii) To analyse the problem and to identify its root causes.
- (iii) To develop corrective strategies for the present problems and preventive measures for the future.

In order to determine how far the environmental problems exist in India, we must have the right perspective of the beliefs, attitudes, values and behaviour of the people. Such an approach will be helpful in appreciating the magnitude of the problem.

The aspects of human behaviour which are directly related with man's interaction with the bio-physical environment and his ability to solve environmental problems are related with environmental education. The objectives of environmental education programmes include the utilization of extra-perceptual information, sensory awareness, the relationships of oneself to society, the ecological thinking and value development. It leads to creating ecological conscience and for that reason an action is considered right when it tends to preserve the integrity, stability and beauty of biotic community. The aim of environmental education, is thus, to bring man into harmony with himself, his fellowmen and his environment.

An action model suiting conditions in USA has been proposed by Stapp (1974). The instructional programme approach to environmental education is considered by him to bring out the following major constraints to the development, implementation and evaluation of such a programme :

- (i) Environmental education is interdisciplinary and problem-solving, whereas the present day education is discipline oriented.
- (ii) The educational curricula are already crowded with subject matter materials and incorporation of additional areas is considered a burden.
- (iii) Environmental education cannot avoid the value question.

- (iv) Shortage of classroom teachers prepared to effectively integrate environmental education into instructional programme.

India harbours 1/7th of the world population on 2.5% of the earth's surface. It is essentially a rural society, about 20% of the population lives in towns and cities. India's problems revolve around very high population, low availability and utilisation of natural resources, poor standard of living and low literacy level, which is around 30 per cent. Besides a poor understanding of the environmental problems of India, there is even a very low level of awareness and hence the process of working out the strategies is very slow,

Environmental problems in India

The environment of man has been changing owing to climate or geological upheavals. Man himself has been responsible for altering the environment and in many instances his influence resulted in accelerating the process of deterioration. The influence of man in changing the environment is more spectacular wherever he has tried to concentrate in great numbers. When living in the countryside in small villages, he fits in with the nature quite well and whatever filth or pollution he gathers around him continues to dissipate in the adjoining countryside. The process of disintegration of waste materials is further accelerated by the climatic conditions obtained in India. About 80 per cent of the people in India live in the rural areas and 20 per cent in towns and cities. This has been almost a steady pattern during the last more than 100 years except that the density of population has increased tremendously in the recent past.

Human aggregations in big villages, towns and cities are confronted with the problem of accumulation of human and domestic wastes. There is open sewerage system in practically all the villages, towns and even in the major cities in the country. The pathogenic micro-organisms emanating from such wastes pose health hazards. The contamination of drinking water supplies with sewage polluted water has been responsible for the occurrence of epidemics of diseases such as hepatitis, dysentery, typhoid, cholera, etc. at many places. The epidemic of hepatitis that rocked Delhi during 1956 is one such example. According to an estimate about 20 per cent of the hospital beds in India are occupied by patients suffering from typhoid and cholera, caused by the drinking of sewage-contaminated water.

It is estimated that sewerage produced by a single person would consume the total quantity of oxygen dissolved in 9000 litres of fresh water and hence the sewage water when released in a stream is harmful to fishes and other wildlife. About 3000

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million litres of sewage or sullage are estimated to flow out of cities and towns of India every day. It is either applied as irrigation water with or without treatment, or discharged into the nearest river or stream. The addition of sewage/sullage emanating from the towns located on the banks of the rivers Cooum, Adyar and the two tributaries Amaravathi and Bhuvani of Cauvery in South India has resulted in deterioration of the quality of water. The modern methods of sewage treatment, involving sedimentation, biological oxidation and chlorination, lead to the removal of a fairly large number of pathogenic bacteria and organic matter from the sewage. The provision of a similar system in such a vast country as India is a stupendous task which involves huge capital investment. Some steps in this direction have, however, been initiated in the major cities of the country.

The wastes given out by various industries vary in their characteristics and quantity, depending upon the nature of the product, raw materials and the processes to be used, and the by-products recovered. The common practice is to dump liquid wastes either into the soil around factories or to discharge them into a nearby water body. Industries like pulp-paper textiles, sugar, hydrogenated vegetable oils, coal, petrochemicals, anti-biotics, agrochemicals, leather products, etc. all pollute urban as well as the rural environment. The effluent water is not only a source of direct poisoning of the human beings but also kills practically all the aquatic fauna. The pollution of air caused by various industrial units include dust particles, hydrogen sulphides, oxides of nitrogen and sulphur, carbon monoxide, etc. which cause various physiological ailments and the diseases like pneumoconiosis, silicosis besides causing structural damage. The ensuing threat to the historic Taj Mahal owing to the location of petro-chemical complex at Mathura is causing anxiety among the Indian society.

A wide range of biologically active organic compounds have come into use in modern agriculture. These chemicals include fertilizers, insecticides, fungicides, weedicides etc. The consumption of agro-chemicals in India is not as high as compared with that in USA, Japan or UK but there are, however, certain localities where the use is rather heavy. Only 9.45 kg of fertilizers are consumed per hectare in India as compared to 31.85 kg in USA, 97.04 kg in UK and 346.81 kg in Japan, but in Ludhiana District of Punjab over 130 kg of fertilizers are used per hectare. Similarly, per hect. consumption of pesticides in India is worth Rs. 2.15 as compared with that of Rs. 66/- in the USA, Rs. 82/- in UK and Rs. 200/- in Japan. The pesticides, however, are used far in excess on vegetable crops grown around big cities in India. The public-health programmes also include an extensive application of pesticides that can itself pose hazards to the health of man and cattle. The recent reports about detection of contamination of milk samples with DDT (mean level, 0.26 ppm, maximum 1.02 ppm) in the Ludhiana District of Punjab, as against the permissible limits of 0.0625 ppm of DDT in milk, emphasize the gravity of health hazards posed by

insecticidal pollution in localized situations. The adoption of intensive cultivation practices on a massive scale for increased agricultural production would involve still greater use of agro-chemicals.

The forest wealth of India has been exploited on an extensive scale. Deforestation led to floods and water erosion of the soils, rendering huge areas unfit for cultivation. It is estimated that India has a total of 400 million hectare metres of groundwater out of which approximately 29% runs off as seasonal floods which not only destroy crops and valuable property but also drain large amounts of plant nutrients from the soil. Massive efforts are underway to canalize the groundwater in the country but it is also essential that areas prone to water erosion are planted with forests. It will serve the dual purpose of stopping water erosion and of providing people with timber, cattle feed, fuel and paper-pulp.

Environmental education in India

The greatest enemies of man in his struggle for decent living/existence are ignorance, apathy, inhumanity and venality, whereas his best allies are knowledge, ambition, humanity and integrity. The aim of education is to help man's allies dominate over the enemies and thus make him more functional. Since education is the natural, progressive and harmonious development of all the human powers and faculties, the aim should be development of inherent potentialities rather than merely imparting of knowledge. Thus, the environmental education should be aimed at improving the man's ability to solve the problems of his bio-physical environment.

The strategy for environmental education in India has to be different from that adopted by more advanced countries. The action plan should include the following :

- (i) The adult education, both formal and non-formal, must start from understanding the physical self which if possible only through the understanding of the environment.
- (ii) Since India is predominantly an agricultural country, the rural masses must have a proper understanding of the environment and be familiar with the concept of optimum exploitation of natural resources.
- (iii) The school education which has a compulsory curriculum of general science, must start with the basics of environmental education and the place of man in environment.
- (iv) For preparing the right curricula for environmental education and the text book materials, the required knowledge of the principles of ecology is essential. In fact, all biological sciences must have a strong base of ecology which should be taught in terms of physical, biological and social components. For giving proper training to teachers, planners and educationists, the higher institutions like universities must have Departments/Institutes of Environmental Sciences where emphasis should be laid on

integrating the role of physical and biological sciences for the attainment of natural balance and welfare of man.

- (v) The government at all levels of planning must accept the role of ecology and environmental sciences in the optimum exploitation of the natural resources and in the normalization of human welfare suiting the psychosociological, climatic and political conditions. This policy will not only speed up the process of development but will also economize the implementation of various projects. The concepts such as 'Integrated Rural Development' or 'Integrated National Development' basically imply the Integrated development of man. Hence, man should be the centre and the environment around him should come first in planning and the implementation of national policies.

There are going to be many constraints in adopting the above action plan in India. Some of these would be :

- (i) Improvement in living conditions involves huge expenditure.
- (ii) Widespread illiteracy and religious fanaticism.
- (iii) Lack of public opinion for forcing the government for enactments and implementation.
- (v) The tropical climate with high temperature and humidity leading to fast multiplication of vector species and the easy natural culturing and growth of micro-organisms. This leads to rapid outbreak of epidemics.

Both for formal and non-formal environmental education, direct, immediate and concerted efforts are needed for imparting population education, improving public health, controlling industrial and agricultural pollution, and rationalising the use of natural resources. The concept of environmental education is new to India but many universities and Research institutes have already included some environmental courses in their curricula. There is a strong need to evolve a national plan on environmental education so that the subject is taught at all levels both as formal and non-formal instructions. The proposed curriculum should create ecological consciousness leading to an overall improvement in the quality of environment.

It is recommended that environmental education be accepted as an essential component of the national education programmes and that a national level group for devising the curricula for environmental education be set up so that ecological consciousness is created at all levels and strata of the Indian society with the minimum loss of time.

Proposed curriculum for environmental education at various levels

A. General public : Ecological consciousness could be created among the people through mass media of communication. The emphasis should be on : population control ; human environment and its deterioration ; environmental health and epidemio-

logy of infectious diseases transmitted by vectors ; personal and public hygiene ; traffic congestion ; noise ; industrial pollution, etc.

B. School level : Since biology is not taught as a compulsory subject at the high school level, the introduction of environmental education, which is inter-disciplinary in approach, would be considered an unnecessary burden. Keeping in view the importance and the potentialities of the programme the students need to be exposed to : (a) the concept of environment ; (b) growth of human population and its influence on resources ; (c) usage of land, water and forest wealth ; (d) environmental health emphasizing the importance of public sanitation, health and the common infectious diseases transmitted by vectors. This can be done by widening the scope of physical education, which is a compulsory subject. The land, water and forest usage can be covered under geography.

C. College level. There are two streams of students in the traditional system of college education, the science group and arts and the humanities group. The science group can be imparted environmental education both as part of the science subjects and as a general coordinating course linking the physical and biological sciences as applied to the environmental studies. The topics covered should include : the concept of ecosystem, population growth, environmental deterioration, recycling of wastes, personal and public hygiene, traffic congestion and improvement of human habitat.

The students of arts and the humanities group are not generally exposed to the science subjects, hence it would be rather difficult to incorporate environmental education in the study programme of this group. Even they can be exposed to environmental education by way of tutorials arranged once or twice a week, but the students must earn credit. Environmental education can be a subject for the B.Sc. (Medical) graduates. They could be considered for appointment as Sanitary Inspectors.

D. University level : Here again there are two streams of students at this level. Similar difficulties as explained at the college level are envisaged for introducing environmental education in the traditional system of university education. For the science students most of the universities have courses in related subjects, such as plant ecology and animal ecology. Environmental orientation even in physics, chemistry, physiology, etc. should be introduced.

Some of the professional institutions like the Agricultural Universities offer courses which have a direct bearing on the environmental problems. The following courses are taught at the undergraduate level for the students of Agriculture Faculty in some universities :

(i) **Agricultural resources :** Land and water resources for agriculture, impact of agriculture on trade and industrial development, crop and livestock production and the yields, plants in relation to environment, agrometeorology.

(ii) **Introductory agricultural ecology :** Concept
(Contd. on page 304)

Internal Management of Universities

D.K. Ghosh*

The objective of this paper is to focus on the importance of a strong Internal Management in the Universities and the immediate need of rejuvenating the Administration of Universities to enable it to meet the challenges of new dimensions in Higher Education in the Universities headed by the Vice-Chancellors.

The Robbins Report on Higher Education in U.K. (1963) observed that no other enterprise would impose on its Chairman, the variety and burden of work as the modern University requires of its Vice-Chancellor. For obvious reasons, in the context of India, the problems are still more and therefore, they impose greater burden. This makes it all the more necessary to build a strong administrative structure, within the system to ensure that it is capable of providing all the required help to the Leader of the system, i.e. the Vice-Chancellor, in his varied work of magnitude and complexity.

Education is the largest organized sector in the country for which we spend about 500 crores per annum on higher education alone and if the education of all levels and of all areas are taken into account, the annual expenditure on education comes to more than 2000 crores which is next to Defence Budget only. To man this large sector, the need to have specially trained personnel cannot be denied or even postponed any longer. Every field of work has its special needs and, therefore, specially trained persons are certainly more useful in the special job. We are living in an age of specialisation and it needs hardly be emphasised that the University administration which is an area of delicate problems, mishandling of any nature may prove fatal. It is not a mere rules-making unit, but a *workshop* of 'human relations' requiring special skill which pre-supposes a good background of Education, its objectives and sufficient understanding of the psychology of teachers and students. Recognising this need, the Kothari Commission said "Administration is essentially a matter of faith and vision, bold and courageous leadership and proper handling of human relations. The importance of securing the right type of personnel for it cannot, therefore, be over emphasised." A number of 'ills' generate from inefficient management which directly and indirectly affect the communities of teachers and students and ultimately impair the objectives of education. Since universities are autonomous bodies and are free to work within a given area of work, it is obvious that they should have the necessary expertise to manage their own affairs.

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In practice, the key position holders in the internal management of the Universities are either imported administrators from outside the system who have little acquaintance with various aspects of the education system or just some senior teachers having little knack or knowledge of 'management' is inducted. Such a practice cannot for obvious reasons help efficient running of the administration.

Our system of University Management is one based on the collaboration of work between the Administrators and the Educators. The system is such that although primarily Educators are the decision-makers administration plays important role in the decision making promises by way of providing good and reliable material for the decision-making authorities of the system. It cannot be rejected that a good deal of good results from the investments in Education, depends on the performance of the Administrators.

No less important is the process of implementation of decisions, in the course of which, many of the important schemes and decisions get lost either due to mishandling or the absence of a lack of proper understanding and appreciation on the part of the executors in the Administration. While this is not desirable and is contrary to the expectations, the fact remains that because all executors do not possess the requisite background for a proper understanding and appreciation for the academic schemes, this happens. What is essentially needed is an academic-oriented approach to deal with the academic problems and schemes. Contrary to this, one would agree that due to lack of the proper background, initiative and understanding not infrequently, important schemes fail either due to delay or defective approach for implementation. The shortage of properly trained personnel in the set up of our administration has also been pointed out by the Kothari Commission.

Since the emergence of the University Grants Commission as the authority to assess and finance the developmental activities of the Universities, more and more emphasis is being laid on planning. In the matter of Planning in Indian Universities, a good deal depends on the administrative organisation, procedure and potentiality. Planning has assumed more importance in the context of changing approaches to social demand for more better and relevant education. Ours is a poor country where public money should be utilised in the best possible manner so as to avoid wastage. Still greater care is needed in education which always suffers from short allocations. For this, what is primarily needed is the concept of 'area planning' which can be done only by such personnel in the field of education who have :

- (a) fuller background of our education system;
- (b) complete knowledge of the needs in the University keeping in view its past achievements potentiality and needs with priorities;
- (c) fuller idea of the needs of the Region in Education and what the Society around requires in the context of National Educational policy.

Unless our University personnel is suitably trained to accept the new challenges in education, it would be hoping against hope that it would properly respond to the needs of the system. Not only in-service training courses, holding of conferences and Seminars would also go a long way in meeting this need.

To meet the requirements of proper planning and handling of problems of varied nature, a broad-base training would be helpful to the University personnel. Obviously, to meet the special needs of the University administration, it is high time that there should be suitable in-service training courses for the University personnel which should be different for different categories of personnel keeping in view the job-requirements. The Training Course should be so designed as to provide a broad-base for the entire educational master plan together with a background of the Indian System of education. Suggested below is a scheme of papers for such training :

Paper—I : History of Indian Education—Ancient and Modern.

Paper—II : A General Study of the Post Independence Reports of various Commissions on Indian Education.

Paper—III : Academic set-up of Indian Universities.

Paper—IV : Academic Planning and Execution.

Paper—V : Management System in Indian Universities and their present merits and demerits.

Paper—VI : Behavioural Aspects—Relations of
(a) Administration with Teachers
(b) Administration with Students
(c) Administration and Educators with Students

Paper—VII : Case study—Given Problems of various nature seeking solutions.

Paper—VIII : Functions and Responsibilities of Central Agencies e.g. U.G.C., I.A.R.I., C.S.I.R. etc.

Paper—IX : General Study of the Pattern of Secondary and Higher Education in developed and some of the developing countries.

I have only made a general suggestion for framing a Syllabus for a broad-base Training. It would be in the fitness of things that the University Grants Commission considers this aspect of University need and frame, in collaboration with the National Staff College for Educational Planners and Administrators and the Administrative Staff College of India a suitable syllabus. ☐

Linkage with Environment

(Continued from page 302)

of ecosystem and biosphere, interaction between biotic and abiotic components and problems thereof, stresses on ecosystem, population growth, food requirements, sources of pollution, environmental conservation and health.

It is suggested that all the students in an Agricultural University must be exposed to the fundamentals of ecology including the concepts of ecosystem, population pressure, environmental deterioration, recycling of wastes, improvement of human habitat and the optimal use of natural resources. Similarly, other professional institutions like Medical and Engineering can also create ecological consciousness, by improving the curricula relating the environmental sciences. It is essential that the graduates must be trained to mobilize public participation so that the adoption process is facilitated.

E. Departments/institutes of environmental sciences : Creation of separate departments/institutes of environmental sciences will provide basic training for an integrated approach to rural development, public health and industry. The curriculum could be worked out according to the needs of any particular region or the country as a whole.

F. Proposed plan for the future. It is suggested that this proposal may be approved at the annual session of the Association of Indian Universities and a recommendation be made to the University Grants Commission for constituting an expert committee to work out the details of the curricula. Among other terms of reference, the committee may be asked in particular to make recommendations on the desirability of starting departments or institutes of Environmental Science in selected universities to start with. ☐

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KSD Sanskrit University Plans

Dr. Ram Karan Sharma, Vice-Chancellor, K.S.D. Sanskrit University said that amalgamation of the traditional and modern systems of Sanskrit studies was introduced so that the Mother of languages could be acceptable to the people in general. The Vice-Chancellor said that the experiments with the new syllabi made in the last three years gave encouraging results. More and more students were now taking interest in the language. Dr. Sharma said that it had been done to fall in line with the national pattern of 10 plus 2 plus 3. Under the new courses of studies from primary to the Acharya examinations, a student takes 17 years (10+2+3+2) and efforts were going on to a

sum of rupees twenty lakhs had been sanctioned for the developmental activities of the university. As part of the development plans, a 15-point programme has been drawn up which includes, among other things, development of post-graduate teaching, setting up of a health centre, a coaching institute, bhasha samsthan, an audio-visual centre and introduction of Shiksha Shastri courses.

Training for self-employment recommended

A two-day regional meeting on agriculture and rural development held recently in Gauhati has recommended introduction of appropriate training schemes for self-employment and development of requisite skills and manpower in the north eastern re-

they could take the new land use patterns with confidence.

The meeting was attended by agricultural scientists and senior officials from different states in the region. Dr. M. S. Swaminathan, Secretary, Agriculture and Rural Development, Government of India, also participated in the deliberations of the meeting.

National seminar on import of technology

Inaugurating at the Indian National Science Academy a two-day national seminar on import of technology and its impact on development, Mr P.N. Haksar, former Deputy Chairman of the Planning Commission, said in Delhi that the import of technology was decided by prevailing socio-political conditions and had to be viewed within the framework of the value system of the society. He reiterated that science and technology were not independent factors but were governed by the social structure. Criticising the neglect of rural sector, Mr. Haksar pointed out that rural tension was mounting as agrarian reform had not been meaningful.

Mr. C. Subramaniam and Mr. K. R. Ganesh, former Ministers at the Centre, urged for an alternate source of the import of technology which should be conducive to rural development.

Prof. A. Rahman of the CSIR said that the failure of Indian scientists to tackle the technological problems was inter-linked with the demand for the import of technology. He was emphatic that foreign technology had always hampered the growth of indigenous technological development. Prof. Prabhat Patnaik of Jawaharlal Nehru University said that the Foreign Exchange Regulation Act and the liberalism in import policy strengthened foreign investments of the multinational corporations. Dr. Siddhartha of the Indian Space Research Organisation said that in his opinion import of technology should be made only when do-

CAMPUS NEWS

give a new dimension to Sanskrit studies.

Dr. Sharma said that the examination reforms introduced by the university had improved things to a great extent.

The university had taken the lead in introducing a public test of the scholarship of a student or teacher in particular Shastra in an open congregation of students and sanskrit scholars on the Republic Day every year. A large number of students, teachers and scholars participate in this public demonstration of knowledge and interest.

Dr. Sharma said that the university was also proposing to set up an Institute for the study and research of the Vedas with a view to popularising Vedas and other scriptures. After a review of the performance of the university, the State Government has extended assistance to bring it at par with other universities. To begin with

gion. It suggested action-oriented programmes for agricultural and rural development in the region which was yet to catch up with the rest of the country.

The meeting emphasised the need for strengthening the agricultural data base and recommended that the North-Eastern region should sponsor a suitable project with the assistance of the Directorate of Economics and Statistics for collection of agricultural data. Considering the tremendous production potential in various fields including agriculture, forestry, animal husbandry and fishery, etc. in the region, it was felt that current efforts in the transfer of improved technology through integrated packages of service and public policies needed to be intensified. It also recommended utilisation of rural grain storage scheme for storage of rice and other grains needed for the home consumption of the tribal people so that

mestic technology was not available. He maintained that the foreign countries were not interested in transferring technology and this could be seen with the Technology Ban Transfer Act scheduled to be passed by the United States.

BHU organises summer institute in comparative education

The Mahila Mahavidyalaya of the Banaras Hindu University will organise an all-India summer institute in comparative education for the benefit of teachers from various universities and colleges from 16th May to 5th June, 1979. The Institute has been sponsored by the University Grants Commission. Some of the main activities of the institute will include analysis, articulation and rationalization of courses of comparative education for various levels and preparation of models for a few micro area studies. Special lectures and discussions with the leading Indian and foreign experts will provide few brainstorming sessions and an opportunity for interaction.

Dr. Brain Holmes, Head of the Deptt. of Comparative Education, London University and other experts in the field of comparative education have been invited to deliver lectures at the Summer Institute.

HP Agricultural Varsity convocation

Dr. M.S. Randhawa, former Vice-Chancellor of Punjab Agricultural University, delivered the convocation address at the College of Agriculture of the Himachal Pradesh Agricultural University recently. He praised the role of scientists and agricultural universities in making the country self-sufficient in food. He said that the scientists had evolved high yielding varieties and the agricultural universities had provided a link between the scientists and farmers. This link played a significant role in popularising modern technology among farmers. In order to bring about the green revolution

the farmers had to use costly modern implements and other inputs. Dr. Randhawa therefore cautioned that unless the farmer was paid proper remuneration, agricultural production was likely to suffer. He also emphasised the need for improving the agricultural marketing and storage systems which were evolved during the period of food deficiencies.

HAU adopts 700 poor families

The Haryana Agricultural University has decided to adopt 700 families of small and marginal farmers and landless labourers under its 'lab to land' programme. These farmers will be taught latest techniques in farming. Credit facilities would also be extended to them.

Telugu as medium of instruction suggested

As part of the diamond jubilee celebrations of the Osmania University, a three-day symposium on Telugu as official and teaching language was organised in Hyderabad. Speaking at the valedictory function, the State Education Minister, Mr. B. Venkataram, stressed the need for making Telugu as medium of instruction in universities with a view to making it acceptable to all by developing it to meet the needs of administration and teaching. He said that original works in Telugu should be produced and not merely translations. The research work published in English was not reaching the people due to the language problem.

Prof. B. Rama Raju, Head of the Telugu Department urged the Government for the establishment of a research institute and a laboratory for modern Telugu language and literature on the campus. He pleaded that Telugu and other regional languages included in Article 351 of the Constitution should be given equal importance as Hindi. Adequate funds should be made available for publishing books and dictionaries in Telugu at the university level.

Study of human rights in varsities suggested

Dr. Nagendra Singh, Vice-President of the International Court of Justice has suggested introduction of human rights as a subject of study at the undergraduate level in the universities. Delivering the second Motilal Nehru lecture on Human Rights and the Future of Mankind, Dr. Singh said that Government must encourage human rights education not only from schools to universities and at national centres of learning but also in relation to the masses. He emphasised that the European example had to be regarded as a model for other countries to provide the right solution to the problem of enforcing human rights in the long run.

Shri B.D. Jatti, Vice-President of India, in his inaugural address pleaded for mobilisation of public opinion for the preservation of human rights and urged the lawyers to provide legal aid to the poor. The President, Shri N. Sanjiva Reddy in his message sent

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The last date for submission of applications from university/college teachers for a **BASIC LEVEL CORRESPONDENCE COURSE IN EVALUATION METHODOLOGY AND EXAMINATION** on the prescribed form has been extended to **20th June, 1979.**

V. Natarajan
Project Officer (Examinations)

on the occasion called upon the legal profession to rededicate itself to the service of the society.

Medical Varsity to be established in U.P.

A Medical University is proposed to be established in Uttar Pradesh and all the medical colleges in the State would be affiliated to that university. This was announced by the State Health Minister, Mr. Rama Shankar Kaushik, while presiding over a conference of principals of medical colleges and senior medical superintendents held recently in Nainital. Medical education, he said, could not be separated from medical services and the medical colleges had to play an important role in preparing doctors capable of meeting the aspirations and needs of the public.

It was decided at the conference that admissions to post-graduate classes in medical colleges should be made through competitive examinations. The conference expressed the view that posts of Readers should be filled by promotion and of Professors through direct recruitment. This would help in maintaining high standards of teaching.

Condensed MBBS course

The Tamil Nadu Minister for Health announced that a condensed MBBS course of three and a half years duration for those who had taken the MSc degree in the faculty of Medicine will be introduced from the next academic session. Speaking at the inauguration of the Annual Conference of the Association of Teaching Staff in the Tamil Nadu Medical Services, the Minister said that he had already held discussions with the President of the Indian Medical Council in this behalf.

Hindi as link language suggested

Mrs. Jothi Ventakachellum, Governor of Kerala, said that Hindi should be developed and

taught extensively so that it could serve as a common medium and reflect national consciousness. Speaking at the valédictory function of the seminar organised by the Kerala Branch of the Dakshin Bharat Hindi Prachar Sabha she said that the development of Hindi did not mean denying the place of the mother tongue in education. The mother tongue should be the medium of instructions and the language of administration at all levels. But Hindi, drawing strength from Sanskrit and other major languages, alone could serve as a link language in the country.

About twenty thousand students are at present learning Hindi voluntarily through English, Tamil and Malayalam in five different courses being run by the Hindi Directorate of the Ministry of Education and forty five per cent of these students are from Tamil Nadu alone. The Kerala Education Minister said that the State had already introduced a 3-language formula and it had greatly helped Kerallites to seek jobs outside the State.

World Sanskrit conference

The fourth World Sanskrit Conference will be held in Weimar, German Democratic Republic, under the auspices of the International Association of Sanskrit Studies. About 250 scholars and indologists are expected to participate in the said conference.

The Ministry of Education, Government of India, has nominated a delegation of four members comprising Dr. M.M. Sharma Professor & Head of the Department of Sanskrit of Gauhati University, Dr. Sreekrishna Sharma of Tirupati, Dr. Miss Solomon of Ahmedabad and Dr R. V. Joshi of Delhi under the Indo-GDR Cultural Exchange Programme, for participation in the conference. Dr. Sharma will present a paper in English on the Sanskrit Inscriptions

of Ancient Assam and another in Sanskrit on Banabhatta.

Delhi Varsity raises age limit for admission

The University of Delhi has raised the minimum age for admission to undergraduate courses from 16 to 17 years with a view to enabling the students to get admission into colleges after passing the Examination under the new 10 plus 2 system of education. The university has fixed 12-years of schooling as the condition of eligibility in accordance with the new pattern of education. Since some States have not adopted the twelve-year pattern, their students passing 11-year, Higher Secondary examination will have to acquire 12-year secondary qualification before getting entry into the Delhi University colleges.

Mithilesh-Mahesh memorial lecture at Sanskrit Varsity

While inaugurating the Mithilesh-Mahesh-Ramesh memorial lecture series at the K.S.D. Sanskrit University, the Chancellor Shri K.B.N. Singh said that the science of astronomy and astrology was highly developed in ancient India and there was a great need to keep the tradition alive. He regretted that there had been a great erosion of this science in our country as people were becoming more materialistic. He expressed the hope that the university would continue to strive for revival of the great tradition of astronomy in India.

The lecture was delivered by Pt. Vishnukant Jha, a well-known Sanskrit scholar. Dr Rajendra Prasad, Dr. Radhkrishnan and Dr Suniti Kumar Chatterjee had also delivered lectures under this series in previous years.

The Vice-Chancellor of the university. Dr. Ram Karan Sharma, welcomed the guests and explained the back-ground of the lecture series.

Changes in Karnataka education policy

The Karnataka Government has decided to increase the number of seats in engineering colleges by 1,070 with effect from the current academic year to meet the increasing demands of the people of the State. More colleges in Engineering are also proposed to be started.

Commenting on the education policy of the State, the Education Minister, Mr. B. Subbayya Shetty said that the Government was keen on making adult education a mass movement in which high school students would be involved. The students who helped in the spread of adult education would get an incentive of 10 marks in their SSLC examinations. The Government was also re-examining the question of introduction of Sanskrit from the eighth standard as the first language. There were complaints that it had led to misuse in getting more marks in the subject at the cost of students who took other languages as the first language.

Correspondence courses at Calcutta University

After a meeting with the Vice-Chancellors of the State Universities, the West Bengal Minister for Higher Education, Mr Sambhu Ghosh, said that Calcutta University would introduce correspondence courses from the ensuing academic session. This was being done in accordance with the 'Gani Committee' recommendations.

The Minister also discussed various issues relating to administration and other academic affairs of the universities with the Vice-Chancellors.

With the Minister as chairman and other Vice-Chancellors as members a Committee has been set up to streamline the university administration and coordinate work relating to standards and finance.

It was also decided at the meeting that with effect from 1980-81 session English and Bengali will be elective subjects in all State Universities.

New ideas in vocation and technical education

Vocational and technical education has come to occupy a pivotal position in the societal structure of the Asian countries. The development of productive skills relevant to economic development and integrated rural development are two areas in which many countries have a vital stake.

Innovations in vocational and technical education, necessarily, revolve round the capacity of the community to absorb new ideas and to profit by them. The school curricula in all the participating countries of APEID are being re-drafted to introduce an element of vocational education. This step, it is hoped, will ultimately enable the students to appreciate the importance of productive work.

The manner in which the countries in Asia are tackling the problems encountered in this field provides valuable insights into the ebb and flow of ideas.

Phillippines has telescoped village high schools into community learning centres, providing for vocational training in actual work situations. Students, adults, and out-of-school youth are all involved in the planning and implementation of school-community industrial projects. Trades and industries are also being set up in these schools.

In the Republic of Korea, vocational education is divided into in-school and out-of-school programmes. Vocational high schools producing skilled workers or artisans and junior vocational colleges turning out technicians fit into the in-school type. Agricultural, commercial, technical, and marine and fisheries high schools are different categories of vocational high schools.

There is a great upsurge of interest in technical high schools which have been grouped into four categories—mechanical high schools, demonstrative technical high schools, specialised technical high schools, and general technical high schools. Of these, mecha-

nical high schools producing precision machine workers, ranks first in government's financial and administrative support. By 1981, a total of about 22,000 precision workers are expected to come through this channel.

Thailand has embarked on the establishment of area vocational centres and teaching of agricultural education, improvement of mobile vocational training and invigoration of polytechnic education. Financial support and research grants from APEID go to make the programme on going and successful.

In no other country perhaps is the link between education and productive work so well recognised and exploited as in Indonesia where the secondary schools train students for economically productive work and 35 per cent of upper secondary enrolment is for vocational courses.

Work-related education is provided at the technical and vocational schools at the upper secondary level in Malaysia. A large number of students in lower secondary classes are provided with work experience. Four elective courses—industrial arts, commerce, home science, and agriculture—are catering to over 520,000 students in this country.

In Papua, New Guinea, two-thirds of high school students who are boarders are now 80 per cent self-reliant for maintenance—through a combination of regular school production and parental contributions. Other forms of post-primary education are likewise focussed on rural productivity and self-reliance. These include a two-year practical post-primary programme for school leavers relating to their communities.

In the Socialist Republic of Vietnam, interlinking of education and productive work has become a crucial feature of education. Schools have organised manual work for teachers and students.

NSS as part of curriculum suggested

A two-day conference of Fielded Officers of the National Service Scheme was inaugurated by Dr. P.C. Chunder, Union Education Minister, in New Delhi recently. He suggested that NSS should form a part of the curriculum for higher education. Those who benefitted from higher education owed a debt to society and should therefore serve the country by making the village people aware of the socio-economic changes.

The Minister said that the scheme had a lot of potential and could prove to be a tool for a revolution in the minds of the people. It can provide the linkage between higher education and society.

Shri Dhanna Singh Gulshan, Minister of State for Education, who presided over the conference exhorted NSS Units to go out more and more into the villages to serve the people there.

NSS units in about 44 universities are engaged in the implementation of the National Adult Education Programme. Over 5,500 adult education centres have been set up by NSS units in 17 States in the country.

SV Varsity to celebrate silver jubilee

Sri Venkateswara University, Tirupati, will be celebrating its Silver Jubilee in September this year. The celebrations will be inaugurated by the President of India, Shri N. Sanjiva Reddy and the Chancellor of the university, Shri K.C. Abraham, will preside over the function.

Research on history & culture of himalayan belt

A five-day conference of the Institute of Historical Studies was held in Gangtok under the auspices of the Sikkim Research Institute of Tibetology. The conference was inaugurated by the Governor of the State, Shri B.B. Lal. He said that the two themes for discussion before the conference—Himalayan Frontiers in historical perspective and sources

of the history of Sikkim—were of great interest to both the people of Himalayan belt as well as to the people of the country.

Addressing the conference, the Chief Minister of the State stressed the need for more research work into the history and culture of the Himalayan Frontier areas. Making particular reference to Sikkim, he said that much of the history of the State was wrapped in mystery and legends and therefore efforts should be made to unravel these.

Joint test for admission to medical courses in Punjab

A joint entrance examination for admission to the medical colleges in Punjab will be conducted by Guru Nanak Dev University, Amritsar, this year. The centres of the examination will be located at Amritsar, Jullundur, Ludhiana, Faridkot, Patiala and Chandigarh.

This new examination will replace the previous one under which admissions were made on the basis of the marks secured in the pre-medical examinations conducted by the universities. It will also minimise malpractices in the pre-medical course examinations. With the introduction of the new system the relative merit of candidates will be judged by uniform standards.

The examination will be open to candidates who have been domicile in Punjab and have secured 50 per cent or more marks in chemistry, physics and biology in the pre-medical examination. Those belonging to scheduled caste and scheduled tribes will be eligible if they secure 45 per cent or more marks.

Centralised exam system in Bihar Varsity introduced

The Bihar University has introduced for the first time centralised examination system in its BA and BSc Pass courses from the current academic year. The Vice-Chancellor of the University, Shri S. Rahman, said that the new experiment had proved successful and the examinations had been going on peacefully. With the introduc-

tion of this system, the use of unfair means at the examinations had been completely eliminated.

Shri Rahman said that regulations for MPhil and PhD had been prepared and a proposal for starting an institute of Gandhian Study had been mooted. The university also proposed to start some job-oriented courses.

Need for overhaul of education system stressed

While inaugurating a school building on the Ritambhara Vishwa Vidyalaya in Gujarat, the Prime Minister, Shri Morarji Desai, stressed the need for a total overhaul of the present educational system. The Government was working on a new meaningful education policy and radical changes would be brought about under the new policy to fulfil Mahatma Gandhi's dreams of establishing 'Ram Rajya' and a welfare state.

The Prime Minister lauded the efforts and role of the institution in eradicating illiteracy among the tribals of the area and said that mankind had become more self-centred with the growing trend of materialism resulting in increasing neglect of social responsibilities and vital problems.

Shri Desai said that education had made man realise his own weaknesses and strength and guided him in overcoming these weaknesses. He added that teachers should avoid blaming students for the present plight of education. Instead they should do some soul-searching to find out whether they had been performing their duties honestly and with devotion.

Mrs. Purnima Pakwasa of the institution, said that the institution had been set up to educate the tribals in the Dang district and free them from the shackles of age-old superstition, ignorance and backwardness. Besides having normal faculties in fine arts and home science the institute would have an industrial training centre, an ayurvedic research centre, an arms training centre for women and a teachers' training centre.

Sports Management Course

For the first time, a Management Course especially oriented to Sports representatives of universities was organised by the Association of Indian Universities from 21st to 26th May, 1979 at the Indian Institute of Technology, New Delhi. About 50 sports

the importance of management theories. It is equally true that sometimes our faith in these theories is naive and touching. But it will be sad if we reject out of hand certain techniques which can optimise the deployment of our resources for a particular social goal".

The President further pointed out that "a university is organised to train young men and women of a society so that they respond to national task more effectively and usefully. But no training of mind is possible if the body is weak. Thus there is a symbiotic relationship between the training of the mind with the training of the body. It is in this context that university sport has to be seen and understood... University sport is not a professional affair with an obsessive thought of sport for the sake of sport. It is one of the important components of the total training of young persons".

He however cautioned that "techniques abstracted at a plane outside your own domain of activities cannot be automatically applied in your respective spheres of work. You must develop an insight into these techniques and

adapt them with your local situation where you must function and what is your daily task. I am sure it is only through this ability to adapt and to apply, you can be more effective in the discharge of your own duties".

Earlier, welcoming the President and the participants to the course, Shri M.S. Ramamurthy, Secretary, Association of Indian Universities pointed out that the sports management course was in the offing for the last three years. It could materialise however only now as necessary financial resources had to be obtained. The Government of India had now been pleased to sanction an appropriate grant for organising the course. He mentioned that the AIU's programmes and activities have helped to shape the policies in higher education in an imperceptible way. He hoped that the present course being organised would be found useful.

Shri G.S. Sivia, Deputy Secretary (Sports), AIU, proposed a vote of thanks.

The objectives with which the course has been planned are the following:

- (i) Acquainting the participants with the managerial, organisational, administrative and financial aspects of sports in uni-



Dr. C. R. Mitra, President AIU, inaugurating the Sports Management Course

representatives of universities from various parts of the country participated in the course.

The Course was inaugurated by the President of the Association of Indian Universities, Dr. C.R. Mitra, on May 21, 1979. In his inaugural address, he observed: "the present day human societies—developed or developing—have placed great faith in the efficacy of the theories of management... In the bewildering array of problems that human society faces, the input of physical, human and intellectual resources towards the solving of these problems do not seem to work effectively. Experts have, therefore, prescribed that the art and science of coordinating and of giving human direction to societal goals must be invoked. It is here that we find the genesis of



The President making a point after inaugurating the Course

- versities.
- (ii) Exposing the participants to modern techniques of management.
- (iii) Optimising managerial efficiency within the limits of given physical and financial resources.
- (iv) Exchange of ideas amongst the participants on difficulties faced by them regarding matters connected with university sports and indepth discussion on ways and means of overcoming the same.

Both professionals and non-professionals were invited to deliver lectures on each of the following:

- (i) Programme and planning of university sports.
- (ii) Organisation and administration of university sports.
- (iii) Secretarial procedures and allied matters including general and financial rules.
- (iv) Organisational set up of university sports bodies.
- (v) Officiating and supervision of tournaments at



Shri S.K. Wankhede just before delivering the first lecture on the Sports Management Course

- various levels.
- (vi) Budgeting and financial resources of university sports.

From the feedback received on the concluding day of the course it can be confidently said that the course was a success.



A view of the audience attending the inaugural session

A list of Doctoral Theses Accepted by Indian Universities

SOCIAL SCIENCES

Anthropology

1. Bhattacharyya, Ranjitekumar. The Moslem of Khiruli: A study in social stratification and boundary maintenance. University of Calcutta.

Sociology

1. Babu, P. A study of the sociological characteristics of small scale industrialists. University of Kerala.
2. Bhanumathi, Ivatury. Repatriates from Burma: A community study with particular reference to adjustment and integration. Andhra University.
3. Doley, D. A study of homicide in upper Assam. Dibrugarh University.
4. Pathik, Ravinder Kumar. Wegaon kee samajik sanrachana aur apchari vyavhar. Awadhesh Pratap Singh University.
5. Pawar, Shahaji Nivrutti. Rural areas in Kolhapur Project: A study in modernization. Shivaji University.
6. Verma, Jagat Dev. Study on attitudes of rural people towards family planning in Satna District of M.P. Awadhesh Pratap Singh University.

Political Science

1. Hazary, Narayan. Voting behaviour and levels of politics in a developing rural society. Berhampur University.
2. Khan, Gulam Hassan. The freedom movement in Kashmir, 1931-1940. University of Kashmir.
3. Singh, Satya Narain. The Gupta administrative system with special reference to provincial administration. Magadh University.

Economics

1. Tiwari, Umesh Chander. Agro industries: Case study of Gwalior and Chambal regions. Jiwaji University.

Education

1. Patel, Gordhanbhai Nagjibhai. Investigation into anxiety among secondary school students of Sabarkanta District. Sardar Patel University.
2. Pramool, Sarabanth. Role of teachers in Gujarat, India and Thailand: A comparative study. M. S. University of Baroda.
3. Shah, Shashikant Gabaldas. Development and tryout of multimedia package on effective questioning in the context of microteaching. South Gujarat University.
4. Thomas, Molly. Some correlates of examination anxiety in college students. University of Kerala.

Commerce

1. Nath, R. P. Cooperative movement in the Aurangabad Division of Maharashtra with special reference to the Fourth Five Year Plan period. University of Indore.
2. Panduranga Rao, Dasari. Trends in transport with particular reference to Visakhapatnam District. Andhra University.
3. Singha, Jagadish Chandra. Socio-economic development of the United Khasi and Jaintia Hills and Garo Hills since independence. Gauhati University.

HUMANITIES

Philosophy

1. Kushari, Nilima. Theory of Drsti Srsti in Advaita Vedanta. University of Burdwan.
2. Narasimha Murthy, Tallapragada. Philosophies of Moore, Russel and Wittgenstein. Andhra University.

Literature

English

1. Agrawal, Ramlal Gulabchand. A study of Ruth Praver Jhabvala's fiction. Marathwada University.

2. Ansari, Abdul Hafeez. A study of letters of John Keats: A study in the growth of a poet's mind. Awadhesh Pratap Singh University.

3. Das, Mekhala. Social criticism in creative writings of H. G. Wells. University of Kalyani.

4. Qamar Alam. Art of Rudyard Kipling and E. M. Forester with special reference to their portrayal of the Indian scene. Jiwaji University.

Sanskrit

1. Chandra Prabha Devi. Post-Sankaradeva religious dramas, 1600-1830 A.D. Gauhati University.
2. Syamala Devi, P. Vasudevavijaya of Vasudeva: A critical edition and study. University of Kerala.

Hindi

1. Ahuja, Sushila Gopaldas. Hindi ritigranthon ke vishesh sandarbh mein Kunverkushal krut Lakhapati Jasasindhu: Ek anusheelan. M. S. University of Baroda.
2. Awasthi, Om Narain. Mohan Rakesh ke krititv ka anusheelan: Katha krtitv. Jiwaji University.
3. Berar, Bhopinder. Samkaleen Hindi kahani mein chitrit nariadhunikta aur puratanta ka anterduvandh. Punjabi University.
4. Munshi, Bimla Kumari. Hari Krishna Premi: Vyaktitv evam krititv. University of Kashmir.
5. Singh, Urmila. Maithili upanyason mein narichitran. University of Calcutta.

Urdu

1. Mohammad Salim Ashraf. Art of Jamil Mazhari. University of Bihar.
2. Zaman, Mohammad. Mirza Salamat Ali Dabir: Life and works. University of Kashmir.

Bengali

1. Abedin, Mohammed Zainal. Bangla prahasane aloke unis sataker Bangla-O-Bangali samaj. University of Calcutta.
2. Bandoypadhyay, Salil Kumar. Rabindranath: Lok-sanskriti jijnasa o Nabamulyayan. University of Kalyani.
3. Basu, Alo. Rabindranath nataka sangiter bhumika. University of Calcutta.
4. Chattopadhyay, Swasti. Bangla upanyaser Dharaye Naresh Chandra Sengupta Bhumika. University of Calcutta.
5. Maitra, Jnanes Chandra. Narijagriti-O-Bangla sahitya. University of Calcutta.
6. Mukhopadhyay, Gopendu Mohan. Dakshin-Paschim rahrbhumir samskriti-o-sahitya. University of Burdwan.

Telugu

1. Devaki, M. K. A critical study of children's literature with special reference to lyrics and songs. Sri Venkateswara University.
2. Kanakayya, Chamarty. A critique of Sripada Subrahmanya sastry's short stories. Andhra University.

Geography

1. Das, Purabi. Present position and problems of development of Indian Sugar Industry: An economic-geographic analysis. University of Burdwan.
2. Dixit, S. P. Structure of work force of Madhya Pradesh, census year 1971: A spatial analysis. Jiwaji University.

History

1. Bhosale, Arunkumar Ramrao. History of freedom movement in Satara District from 1885 to 1947: A critical study. Shivaji University.
2. Hans, Asha. Indian diplomacy during the Suez crisis of 1956. Jawaharlal Nehru University.

A list of select articles culled from Periodicals received in AIU library during May, 1979

EDUCATIONAL PHILOSOPHY

- Reynolds, Philip A. "University in the 1980s: An anachronism?" *Higher Education* 6(4); Nov 77: 403-15.

EDUCATIONAL PSYCHOLOGY

- Cicirelli, Victor G. "Relationship of sibling structure to intellectual abilities and achievement." *Review of Educational Research* 48(3); Summer 78: 365-79.
Duke, Daniel Linden. "Etiology of student misbehaviour and the depersonalisation of blame." *Review of Educational Research* 48(3); Summer 78: 415-37.

EDUCATIONAL SOCIOLOGY

- Apparow, M. R. "Role of higher education in the process of development and change." *University News* 17(9); 1 May 79: 238, 241.
Gupta, Anirudha. "Education and colonial situation." *Mainstream* 17(35); 28 Apr 79: 20-1.
Shah, Madhuri R. "Universities and national development: Linkage with environment." *University News* 17(8); 15 Apr 79: 207-8.

EDUCATIONAL PLANNING

- "ECONOMIC AND social context of education." *OECD Observer* (95); Nov 78: 3-5.
Nurul Hasan. "Education: A critique of draft national policy." *Mainstream* 17(37); 12 May 79: 6-8.
Rudd, Ernest. "Foresight saga: Predicting future numbers of students." *Higher Education* 8(1); Jan 79: 89-98.
Van Lenn, Emile. "New educational environment." *OECD Observer* (95); Nov 78: 6-7.

EDUCATIONAL ADMINISTRATION

- Adkinson, Judith. "Structure of knowledge and departmental social organisation." *Higher Education* 8(1); Jan 79: 41-53.
Iyer, T.S.K.V. "Internal management of universities—BITS experience." *University News* 17(9); 1 May 79: 239-41.
Lewis, Harry A. "A teacher's reflections on autonomy." *Studies in Higher Education* 3(2); Oct 78: 149-59.
Millett, John D. "Managing change in higher education." *New Directions for Higher Education* (19); Autumn 77: 1-16.
Porter, Douglas. "Recent developments in the training of university administrators in the United Kingdom." *A.C.U. Bulletin of Current Documentation* (38); Apr 79: 15-18.
Saha, Lawrence J. and Klov Dahl, Alden S. "International networks and flows of academic talent: Overseas recruitment in Australian Universities." *Higher Education* 8(1); Jan 79: 55-68.
Sivalingam, P. "Universities and national development: Internal management of universities." *University News* 17(8); 15 Apr 79: 209-11.
Thakur, C. P. "Some management aspects of Indian university system." *A.S.C.I. Centre for Educational Policy and Management* 4(2); Dec 78: 8-13.

LIBRARIES

- Das Gupta, A. K. "Need for libraries." *Seminar* (235); Mar 79: 26-9.

TEACHING

- Bhatnagar, Y. C. "Two faces of bilingualism." *Mainstream* 17(35); 28 Apr 79: 15-19.
Case, Robbie. "Developmentally based theory and technology of instruction." *Review of Educational Research* 48(3); Summer 78: 459-63.

- Darby, Dennis A., and others. "Faculty-managed approach to instructional development." *Educational Record* 60(1); Winter 79: 86-92.

EVALUATION

- Godbole, R. D. "Examinations: Are multiple choice tests the answer?" *Science Today* 13(10); Apr 79: 43-7.
Kells, H. R. and Kirkwood, Robert. "Institutional self-evaluation processes." *Educational Record* 60(1); Winter 79: 25-45.
Lockwood, Alan L. "Effects of values clarification and moral development curricula on school-age subjects: A critical review of recent research." *Review of Educational Research* 48(3); Summer 78: 325-64.
Plomp, Tjeerd and Van Der Meer, Adri. "Problems in the context evaluation of individualised courses." *Higher Education* 6(4); Nov 77: 437-52.
Siddiqi, Zakia A. and Z. Khatoon. "Comparison of students' performance under the semester and non-semester system of education in the Aligarh Muslim University." *Journal of Higher Education* (Delhi) 3(3); Spring 78: 369-79.
Squire, P. J. "Some observations on the problem of amalgamated marks regressing to the mean." *Educational Studies* 4(3); Oct 78: 245-8.

ECONOMICS OF EDUCATION

- Gosh, Snigdha and Sathi, Arvind. "Education industry: A social marketing approach." *A.S.C.I. Centre for Educational Policy and Management Bulletin* 4(2); Dec 78: 1-7.
Sharma, G. D. "Unit cost of college education: A case study of Hindu College of Delhi University." *University News* 17(8); 15 Apr 79: 212-7.

PROFESSIONAL EDUCATION

- Blizard, Peter J., and others. "Educational Bureau: A key organisation for facilitating educational development and change." *Higher Education* 8(1); Jan 79: 9-40.

ADULT EDUCATION

- Daniel, John and Meech, Alan. "Tutorial support in distance education: A Canadian example." *Convergence* 11 (3-4); 1978: 93-8.
"EXPERIENCES IN distance learning for adults: Some questions, issues and choices." *Convergence* 11 (3-4); 1978: 72-82.
Iredale, Roger. "Non-formal education in India: Dilemmas and initiatives." *Comparative Education Review* 14(3); Oct 78: 267-75.
Kidd, Ross and Ethrington, Alan. "Radio learning campaigns: The Botswana experience." *Convergence* 11 (3-4); 1978: 83-91.
Lampikosky, Karl. "Integrating study guidance in distance education." *Convergence* 11(3-4); 1978: 100-6.
Patel, I. J. "Convocation sans degrees—diplomas." *University News* 17(9); 1 May 79: 237, 247.

COMPARATIVE EDUCATION AND COUNTRY STUDIES

- Anderson, C. Arnold. "Higher education in transition: An international perspective." *Higher Education* 8(1); Jan 79: 3-8.
"EDUCATIONAL REFORM in Greece." *Comparative Education Review* 22(1); Feb 78: 1-98.
Geiger, Roger L. "European universities: The unfinished revolution." *Comparative Education Review* 22(2); June 78: 189-211.

PANJAB UNIVERSITY CHANDIGARH

Advertisement No. 7/79

Applications are invited for the following posts so as to reach the Registrar, Panjab University, Chandigarh by 13.6.1979, alongwith postal orders of Rs. 10/- for posts Nos. 1 to 8 and Rs. 5/- for posts Nos. 9 and 10. For the posts of Readers fourteen days extra time is permissible to the persons who have to submit their applications from abroad.

POSTS & PAY-SCALES

1. Readers-2 (Temporary, but likely to be permanent) (Grade: Rs. 1200-50-1300-60-1900) (Department of Botany)
2. Reader in Pharmacognosy-1 (Temporary, but, likely to be permanent) (Grade: Rs. 1200-50-1300-60-1900) (Department of Pharmaceutical Sciences)
3. Deputy Director-1 (Physical Education Campus Sports) (Office of Dean of Students Welfare) (Grade: Rs. 1100-50-1600)
4. Tutor-cum-Curator-1 (Public Administration, Directorate of Correspondence Courses) (Grade: Rs. 700-40-1100-50-1300)
5. Tutor-cum-Curator-1 (Geography, Directorate of Correspondence Courses) (Grade: Rs. 700-40-1100-50-1300)
6. Tutor-cum-Curator-1 (Commerce, Directorate of Correspondence Courses) (Grade: Rs. 700-40-1100-50-1300)
7. Foreman-1 (Grade: Rs. 700-40-1100-50-1300) (Department of Physics)
8. Technical Assistant Grade II-1 (Grade: Rs. 350-25-650-EB-30-800) (Department of Zoology)
9. Junior Technician Grade I-1 (Grade: Rs. 200-15-320-EB-20-500) (Department of Zoology)
10. Junior Technician Grade III-1 (Grade: Rs. 120-10-180-EB-15-300) (Department of Education)

QUALIFICATIONS

For post No. 1

Essential

- (a) A first or high second class Master's degree of an Indian University or an equivalent qualification of a foreign University in the relevant subject with bright academic record.
- (b) Either a research degree of doctoral standard or published research work of high standard in the subject concerned in journals of repute.
- (c) About five years' experience of teaching post-graduate classes and/or research; and
- (d) Competence to guide research.

Evidence of being engaged in making innovation in teaching methods and production of standard teaching material, will be an additional qualification.

For post No. 2

- (i) A first or high second class M. Pharm. Degree in Pharmacognosy of an Indian University or an equivalent

qualification of foreign University with bright academic record.

- (ii) A doctorate degree in Pharmacognosy.
- (iii) About five years' teaching experience to postgraduate classes at a University level and experience of guiding research.

For post No. 3

ESSENTIAL

- (i) First or high second class Master's degree in Physical Education (two years integrated course) of an Indian University or an equivalent qualification of a foreign University.
- (ii) About five years' experience of Organising Physical Education Programmes in a College/University.
- (iii) At least University representation in Athletics or any game.

DESIRABLE

Specialisation in Athletics and/or one major game with efficiency in coaching.

For posts Nos. 4, 5 and 6

- (i) M.A. at least second Class in the subject concerned.
- (ii) Proficiency in Punjabi, Hindi and English.

Desirable

Experience in Correspondence teaching, holding responsible academic position in recognised institutions.

For post No. 7

- (i) Degree in Mechanical Engineering with at least 5 years experience.
- OR
- (ii) Three years Diploma in Mechanical Engineering with 10 years experience.
- (iii) I.T.I. Certificate in instrumentation with 15 years experience.

Desirable

- (i) Experience of having worked in Scientific Laboratories.
- (ii) Persons with long practical experience will be preferred over persons with only supervisory experience.

For post No. 8

- (i) M.A./M.Sc. 2nd class or B.Sc. Ist Class with 3 years experience or B.Sc. 2nd class with 5 years experience.

Job requirements

Repair and maintenance of Scientific instruments, used in a Zoological Laboratory.

Note: Persons having experience in the maintenance of instruments and refrigeration system will be preferred.

For post No. 9

- (i) B.Sc. 2nd Class or B.Sc. IIIrd class, with one year experience or I.T.I. Certificate with one year experience, OR Matric Ist class (with science) with 7 years experience.

Note: Persons who know typing and are also conversant with the various types of work in the Science Departments of Universities/colleges will be given Preference.

For post No. 10

- (i) Matric first class with Science.

OR

- (ii) Matric Second Class with Science with 3 years experience.

Candidates for the posts of Readers who do not possess a doctoral degree are required to submit 10 typed/cyclosty led copies of brief resume of their published work.

Persons already in service should route their applications through proper channel. Incomplete forms and those received after the due date will not be entertained. Serving employees may however, send their applications on the prescribed proforma direct to the University. They may route another copy through their department. They will be allowed to present themselves for the interview only on the production of a 'No objection Certificate' from their employers. Canvassing in any form will disqualify a candidate.

Application forms can be obtained from the Cashier, Panjab University, personally on payment of Re. 1/- or by making a written request to the Finance & Development Officer, Panjab University, Chandigarh, accompanied with self addressed stamped envelope of 23x10 cms. and a postal order of Re 1/- drawn in favour of the Registrar, Panjab University, Chandigarh-160014.

DIBRUGARH UNIVERSITY

DIBRUGARH: ASSAM

Advertisement No. 5/79

Applications are invited for the following posts:

1. Professor in English: One post
2. Professor in Statistics: One post
3. Professor in History: One post
4. Reader in Applied Geology: Three posts
5. Reader in Statistics: Two posts
6. Reader in Commerce: One post
7. Lecturer in History: One post
8. Lecturer in Assamese: One post
9. Lecturer in Applied Geology: Two posts
10. Lecturer in Commerce: One post

Scale of Pay

- Professor: Rs. 1500-60-1800-100-2000-125/2-2500(-Revised)
Reader: Rs. 1200-50-1300-60-1900/- (Revised)
Lecturer: Rs. 700-40-1100-50-1600/- (Revised)

All posts carry usual allowances admissible under the University rules in force from time to time and the incumbents will be eligible for Contributory Provident Fund and Gratuity on confirmation as per rules of the University.

1. Essential Qualification

- A. For Professor: An eminent scholar with published work of high quality actively engaged in research, ten years' experience of teaching and/or research experience of guiding research at doctoral level.

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge.

B. For Reader: Good academic record with a doctoral degree or equivalent published work. Evidence of being actively engaged in (i) research (ii) innovation in teaching methods or (iii) production of teaching materials.

At least five years experience of teaching and/or research provided that at least three of these years were as Lecturer or in equivalent position.

C. For Lecturer: (a) A Doctorate Degree or research work of an equally high standard; and

(b) Consistently good academic record with 1st or high 2nd class (B in the seven point scale) Master's degree in a relevant subject or an equivalent degree of a foreign University.

Having regard to the need for developing interdisciplinary programmes, the degrees in (a) and (b) above may be in relevant subject.

Provided that if the Selection Committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard, it may relax any of qualifications prescribed in (b) above.

Provided further that if a candidate possessing a Doctor's degree or equivalent research work is not available or is not considered suitable a person possessing a consistently good academic record (weightage being given to M. Phil or equivalent degree or research work of quality) may be appointed provided he has done research work for at least two years or has practical experience in a research laboratory/organisation on the condition that he will have to obtain a Doctor's degree or give evidence of research work of equivalent high standard within five years of his appointment, failing which he will not be able to earn future increments until he fulfils those requirements.

2. Specialisation Required

(i) **For the post of Reader in Applied Geology**

Structure and Tectonics, Stratigraphy, Sedimentology, Palaeontology, Mineralogy, Petrology, Photogeology, Geological Mapping, Geological Prospecting, Geophysical Prospecting, Geochemical Prospecting, Engineering Geology, Mining Geology, Mineral Technology, Mineral Economics, Hydrogeology, Petroleum Geology, Economic Geology, Statistical Geology.

(ii) **For the post of Reader in Statistics**

Post No. 1: Econometrics/Demography/Educational Statistics/Information Theory.

Post No. 2: Stochastic Processes/Statistical Inference/Experimental Design/Sample Survey.

(iii) **For the post of Reader in Commerce**

Business Statistics & Advanced Accountancy.

OR

Business Statistics & Public Finance and Fiscal Policy.

(iv) **For the post of Lecturer in History** Medieval Indian History and knowledge of Persian will be given preference, if however, no such person is available preference will be given to a person of ancient Indian History and culture.

(v) **For the post of Lecturer in Assamese**

Master Degree in Assamese (Linguistic group) or M.A. in Comparative Philology.

(vi) **For the post of Lecturer in Applied Geology**

Stratigraphy / Mineralogy and Petrology/Geological Mapping/Economic Geology/Coal Geology/Geological Prospecting/Engineering Geology/Geophysical Prospecting/Surveying/Mining Geology/Statistical Geology/Mineral Technology/Mineral Economics/Hydrogeology/Petroleum Geology.

(vii) **For the post of Lecturer in Commerce**

Business Statistics & Monetary and Banking Policy.

OR

Business Statistics

&

Law & Practice of Direct Taxes.

Nine copies of applications for a post of Professor and seven copies of applications for a post of Reader or Lecturer in plain papers giving full bio-data including (1) Name in full (in block letters); (2) Father's name; (3) Date of birth; (4) (a) Permanent address (b) Present address; (5) Present occupation, if any, including name of employer; (6) Present salary drawn (if any); (7) Detailed academic career from Matriculation/Higher Secondary/High School Leaving Certificate Examination and onwards showing division/class, aggregate percentage of marks, School/College/University from which appeared (attested copies of Marksheets, Certificates should be enclosed); (8) Details of appointments held with designation, duration nature of works and name of employers; (9) Research contributions with copies/reprints; (10) Name and address of two referees not related to the candidate together with an application fee of Rs. 5 (five) by CROSSED INDIAN POSTAL ORDER drawn in favour of the Registrar, Dibrugarh University, should be sent in an inner sealed cover superscribed "Application for the post of (Name of the post applied for), Advertisement No. 5/79 enclosed in an outer cover addressed to the Registrar-in-Charge, Dibrugarh University, Dibrugarh to reach him not later than 2nd July, 1979.

The number of this advertisement and name of the post applied for must be referred to in the application. Persons in employment should apply through proper channel or with a no objection certificate from the present employer. All reprints of the research papers published must be attached. Those who had already applied against this University's earlier advertisements

Nos. 5/78 and 2/79 need not apply again. Their applications will be considered for the above posts.

Applications not in conformity with the above requirements will not be entertained.

Candidates will be required to appear at an interview if and when called for. Candidates called for interview for the post of Professor and Reader will be given actual Railway fare according to the rules of this University.

D. Pathak

REGISTRAR-IN-CHARGE

INDIAN INSTITUTE OF TECHNOLOGY, BOMBAY

P. O. I. I. T., POWAI,

BOMBAY-400 076

Advertisement No. 970/79

Applications on plain paper are invited from the citizens of India for filling up the following posts. Persons employed in Govt./Semi Govt. organisation or Educational Institutions must apply through proper channel. Crossed Indian Postal Order for Rs. 7.50 (Rs. 1.88 for SC/ST) for the post at Sr. No. 1; Rs. 3/- (75 paise for SC/ST) for the posts at Sr. Nos. 2, 3, 4, 5 & 6; and Re. 1/- (25 paise for SC/ST) for the posts at Sr. Nos. 7, 8, 9 & 10, payable to the Registrar, I. I. T. Bombay should be enclosed. Incomplete applications will not be considered. Preference will be given to candidates belonging to Scheduled Castes/Scheduled Tribes and ex-servicemen. Age preferably below 30 years, relaxable in deserving cases. The posts carry allowances such as D.A., H.R.A., C.C.A. etc. as per the rules of the Institute (as admissible to Central Govt. Employee stationed at Bombay).

SCALE OF PAY

1. Senior Programmer
Rs. 700-40-1100-50-1300 + usual allowances.
2. Junior Programmer
Rs. 550-25-750-EB-30-900 + usual allowances.
3. Senior Research Assistant
Rs. 550-25-750-EB-30-900 + usual allowances.
4. Senior Technical Assistant
Rs. 550-25-750-EB-30-900 + usual allowances.
5. Junior Research Assistant
Rs. 425-15-500-EB-15-560-20-700 + usual allowances.
6. Junior Technical Assistant
Rs. 425-15-500-EB-15-560-20-700 + usual allowances.
7. Senior Laboratory Assistant
Rs. 380-12-500-EB-15-560 + usual allowances.
8. Mechanic Grade 'A'
Rs. 380-12-500-EB-15-560 + usual allowances.
9. X-Ray & Physiotherapy Asstt.
Rs. 260-8-300-EB-8-340-10-380-EB-10-430 + usual allowances.
10. Junior Laboratory Assistant
Rs. 260-8-300-EB-8-340-10-380-EB-10-430 + usual allowances.

QUALIFICATIONS & EXPERIENCE

1. **Senior Programmer** (For Programming in Computer Centre)

(i) Bachelor's Degree in Engineering/ M.Sc. with relevant project experience and 3 years experience in software development for 3rd generation machines.

(ii) M.Tech. (with specialization in Computer Science) with relevant project experience essential.

2. **Junior Programmer** (For Programming in Computer Centre)

B.Tech./B.E./M.Sc. with relevant project experience in software development.

3. **Senior Research Assistant** (Temporary post for Metallurgical Engg. Dept.)

A good degree of B.Tech./B.E. in Metallurgical Engineering or M.Sc. in Physics or Physical Chemistry. Some experience of Metallographic and X-Ray techniques is desirable.

4. **Senior Technical Assistant** (For Maintenance in Computer Centre)

Diploma in Electronics with 2 years experience in Computer system or digital electronics OR degree in electrical/electronics with relevant project experience.

5. **Junior Research Assistant** (Temporary post for Chemistry Dept.)

M.Sc. Degree in Chemistry (Preferably First Class) with Mathematics OR Physics at B.Sc. level. One year experience in Teaching/Research Laboratory desirable.

6. **Junior Technical Assistant**

a) Department of Chemistry

M.Sc. Degree in Chemistry (Preferably First Class) with Mathematics OR Physics at B.Sc. level. One year experience in Teaching/Research Laboratory desirable.

b) Computer Centre—Maintenance

Diploma in Electronics with two years experience in Computer systems or digital electronics.

c) Electrical Maintenance Division

Diploma in Electrical Engineering from recognized institute with a supervisor's licence of Govt. of Maharashtra or a degree in Electrical Engineering of a recognized University.

3 years experience in maintenance of electrical installation of buildings and distribution system, motor, pumps and construction of H.T., L.T. lines, transformers etc. Experience in preparation of estimate and supervising work of the contractor. Ability to control labourers. Knowledge of P.W.D. procedures desirable.

- d) **Academic Section & Dean's Office**
Bachelor's degree in Science preferably Maths. Knowledge of Statistics & Computer Programming.

7. **Senior Laboratory Assistant** (For Chemistry Dept.)

B.Sc. Degree (Preferably First Class) with Chemistry as main and Mathematics/Physics as subsidiary subjects.

One year experience in a Chemical Laboratory is desirable.

8. **Mechanic Grade 'A'** (Electrical Maintenance Division)

Preferably passed S.S.C. or equivalent. Must hold first class supervisor's licence from Industries and Labour Department, Govt. of Maharashtra. 10 years experience including apprenticeship as an Electrician/Mechanic Grade 'B' or equivalent post being engaged on carrying out electrical installation work. Experience in operation and maintenance of sub-station upto and including voltages of 22KV, consisting of transformers, outdoor equipment like Gods, Do fuses indoor equipment like circuit breaker controls panels etc. Besides, the person also should have experience in maintenance of underground and overhead distribution system, electrical installation in laboratories, residential buildings, repairs of electronic motors, water heaters, water pumps, fans geysers etc. Knowledge in cable jointing will be preferred. Experience may be relaxed in case of candidate with higher technical proficiency and proven ability.

9. **X-Ray & Physiotherapy Assistant** (For IIT Hospital)

Passed S.S.C. or equivalent. Should have successfully completed training in X-Ray and Physiotherapy. Should have 3 years experience in taking and developing X-Rays and E.C.G. and basic knowledge about Physiotherapy.

10. **Junior Laboratory Assistant** (For IIT Hospital)

Passed S.S.C. or equivalent. 3 years experience in handling laboratory equipment and maintenance of the laboratory and routine Pathology tests, like Blood counting, Staining etc.

Candidates who possess the requisite qualifications and experience may apply stating name, date of birth, details of academic qualifications and experience with copies of certificates, testimonials etc. to the Registrar, Indian Institute of Technology, Powai, Bombay-400 076 on or before 15-6-1979.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY : A.P.

Humayun Nagar, Hyderabad-28

B. Tech./B. Arch. Admissions 1979-80

Applications are invited from candidates of Indian origin and who belong to Andhra Pradesh, seeking admission into 1st year of 4-year B. Tech. and 5 year of B. Arch. courses in the University for appearance at the Entrance Examination and admission to the B. Tech./B.Arch. Courses.

1. Eligibility

- i) Candidates who have passed the 2-year Intermediate Examination with Mathematics, Physics and Chemistry as Optional subjects conducted by Board of Intermediate Studies, Andhra Pradesh or

any other Examination recognised as equivalent thereto by the University.

- (ii) Candidates who have appeared/are appearing at the May/June 1979 Intermediate Examination are also eligible to apply, but they will be considered for admission only if they are successful in the qualifying examination.

- (iii) Candidates who have passed the qualifying examination compartmentally are also eligible to apply.

2. Application forms

Application forms can be had from the Registrar, Jawaharlal Nehru Technological University, Hyderabad—500 028 on requisition enclosing (a) A Postal order for Rs. 5/- towards cost of application, payable to the Registrar JNT University, Hyderabad.

(b) A self addressed envelope of size 28 cms x 10 cms with postage of value Rs. 2/- affixed. Postal Order should not be dated earlier than 1st May, 1979.

3. Sale of applications will commence from 23-5-1979. Last date for receipt of filled in application forms either by post or otherwise is 18-6-1979. Date of Entrance Examination; 8-7-1979.

4. Further particulars can be seen in the "Information to the candidates" supplied along with application form.

5. Address for correspondence : Registrar, JNT University, Hyderabad—500 028.

Note : The entrance examination will be for admission to JNTU colleges only.

REGISTRAR

SOUTH GUJARAT UNIVERSITY SURAT-395007

Hari Om Ashram Prerit "Shree Chunilal Vajeram Reshamwala Smarak Trust Award"

Applications are invited for "the Hari Om Ashram Prerit Shree Chunilal Vajeram Reshamwala Smarak Trust Award" of the value of Rs. 5,000/- to be given to an Indian, for his outstanding original research work of merit as judged from his printed research publications in the field of "Social Sciences in Gujarat" during five years from January, 1974 to December, 1978.

Four copies of the application in prescribed forms available from the University Office along with four copies of the printed publications of the candidate should reach to the Registrar, South Gujarat University, P.B. No. 49, Surat-395007 (India) on or before 31-8-1979.

Prescribed application forms and rules governing the award will be available from the University Office on Payment of Rs. 5/- upto 15-8-1979.

G. A. Desai
REGISTRAR

OSMANIA UNIVERSITY

HYDERABAD-500 007, (A.P.)

Advertisement No. 9/79

Applications in the prescribed form, together with the registration fee of Rs. 5/- are invited for the following posts in the University service, so as to reach the undersigned on or before 8th June, 1979.

1. Professor of Marathi
Rs. 1500-60-1800-100-2000-125/2-2500.
2. Lecturers in History/Education
Rs. 700-40-1100-50-1600
3. Lecturers in Geography (leave vacancies)
-Rs. 700-40-1100-50-1600

Age

Professor: Not above (50) years

Lecturers: Not above (35) years

Note

- (i) Age limit does not apply to the employees of this University.
- (ii) Relaxation in age to the extent of five years may be granted to candidates belonging to SCs., STs., and BCs., for the posts of Lecturers only.
- (iii) The teachers of affiliated colleges who have put in at least five years service in any of the college affiliated to the Osmania University may be given relaxation in age to the extent of five years.
- (iv) Age relaxation can be considered in deserving cases.

14%, 4% and 25% reservations are made for Scheduled Castes, Scheduled Tribes and Backward Classes respectively only in case of Lecturers.

Application forms can be had from the Director, Department of Publications and University Press, Osmania University, Hyderabad-500 007, A.P. (India) on payment of Rs. 4.50 in person or by money order or by a postal order UNCROSSED made payable to the Director, University Press, O.U. by sending a self-addressed envelope (11 1/4 x 26 1/4 cms) duly stamped for ordinary or registered post.

Full particulars can be obtained on requisition from the Director, Osmania University Press, free of cost, by sending a self-addressed stamped envelope.

B. Ramchandra Reddy
REGISTRAR

JAWAHARLAL NEHRU UNIVERSITY

NEW DELHI-110067

Advt. No. Aca. III/11/79

Applications are invited for the following posts:

SCHOOL OF INTERNATIONAL STUDIES

Centre for International Politics and Organisation

1. Associate Professor/Fellow or Assistant Professor in International Organization

Associate Professor/Fellow

Qualifications

Essential

- (a) Consistently good academic record with at least a high second class Master's degree in Political Science, History or Economics or its equivalent qualification from an Indian/

foreign University;

- (b) A Doctor's degree or published work of an equally high standard in the field of International Organisation; and
- (c) About five year's experience of teaching and/or research in International Organisation.

Desirable

Some experience of research guidance in the field of International Organization.

Assistant Professor

Qualifications

Essential

- (a) Consistently good academic record with at least a high second class Master's degree in Political Science, History or Economics or its equivalent qualification from an Indian/foreign University;
- (b) A Doctor's degree or published work of an equally high standard in the field of International Organisation; and

Desirable

- (a) Some teaching and/or research experience in International Organisation.

NOTE: There is only one vacancy of an Associate Professor/Fellow; the University will consider applications for both Associate Professor/Fellow and Assistant Professor, or either only,

Centre for Studies in Diplomacy, International Law and Economics

2. Associate Professor/Fellow of International Trade and Economic Development

Qualifications

Essential

- (a) Consistently good academic record with at least a high second class Master's Degree in Economics or an equivalent qualification from an Indian or foreign University;
- (b) A doctor's degree or published work of an equally high standard in Economics; and
- (c) About five years experience of teaching and/or research in Economics;

Area of Specialisation

International Trade or Economic Development.

Desirable

Acquaintance with mathematical and statistical method.

Provided that in the case of Assistant Professor if the Selection Committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard, it may relax any of qualifications prescribed in (a) above.

Provided further that if a candidate possessing a Doctor's degree or equivalent research work is not available or is not considered suitable, a person possessing a consistently good academic record (weightage being given to M.Phil. or equivalent degree or research work of quality) may be appointed provided he has done research work for at least two years or has practical experience in a research laboratory/organ-

sation on the condition that he will have to obtain a Doctor's degree or give evidence of research work of equivalent high standard within five years of his appointment, failing which he will not be able to earn future increments until he fulfils these requirements.

SCALES OF PAY

Associate Professor/Fellow: Rs 1200-50-1300-60-1900.

Assistant Professor: Rs. 700-40-1100-50-1600.

Plus usual allowances as admissible to the members of the staff in the Central Universities.

Relaxation in any of the qualifications may be made (a) in favour of persons of eminence or of high academic professional distinction, and (b) in exceptional cases where adequately qualified persons are not available but are otherwise found suitable for the respective positions. It will also be open to the University to consider the names of suitable candidates who may not have applied.

The selected candidates will be expected to participate in the teaching and research programmes in the concerned disciplines in other Schools of the University as well as in the programmes offered in their own Centres of Studies.

Normally appointment of Fellows is made on contract basis for a period ranging from one to three years.

Benefits of C.P. Fund-Cum-Gratuity/G.P. Fund-cum-Pension-cum-Gratuity are available as per University rules.

Persons already in employment should route their applications through proper channel.

Due consideration will be given to candidates belonging to SC/ST at the level of Assistant Professor.

Second class (mail) rail fare (both ways) will be paid to candidates invited to appear for interview from outstation by the shortest route subject to the production of rail receipt.

Applications, separate for each post, on the prescribed form, obtainable free of cost from the University by sending a self-addressed and stamped envelope of 23 cm x 10 cm, size to the Deputy Registrar (Academic), Jawaharlal Nehru University, New Mehrauli Road, New Delhi-110067, should reach him latest by 22nd June 1979.

Candidates from abroad, applying for faculty positions, may apply on plain paper, (but their applications should reach the University by the last date) furnishing all the relevant informations such as their names, date and place of birth; marital status; nationality; state of domicile; postal and permanent addresses; father's name and address; academic and professional attainments; full details of (a) publications, and (b) research projects undertaken; language(s) known; details of visits to foreign countries; and the name and addresses of at least two persons well acquainted with the candidates professional work who should also be requested by the candidate to forward to the Deputy Registrar (Academic) confidential report concerning the candidate.

**ANDHRA PRADESH
AGRICULTURAL UNIVERSITY
ADMINISTRATIVE OFFICE
'RAJENDRANAGAR'
HYDERABAD-500030**

Advertisement No. 2/79 Dt: 18.5.1979

1. Applications in the prescribed form, together with a Registration fee of Rs. 5/- are invited for the following posts in the Andhra Pradesh Agricultural University so as to reach the undersigned, on or before 25.6.1979. Applications received after the prescribed date and those received without evidence of having paid the registration fee and those submitted in a form other than one supplied by the Registrar of this University, are liable to summary rejection.

S. No., Particulars & No. of post

- (i) Senior Scientist (Groundnut Breeding)—1
- (ii) Senior Scientist (Soil and Water Conservation Agronomy)—1
- (iii) Senior Scientist (Rice)—1
- (iv) Senior Scientist (Horticulture)—1
- (v) Professor (Veterinary Pathology)—1
- (vi) Professor (Extension Methods)—1
- (vii) Professor (Soil Science and Agril. Chemistry)—1
(Temporary for a period of 2 years likely to continue.)
- (viii) Professor of Plant Breeding (Population Genetics)—1
(Temporary for a period of 3 years likely to continue)

Qualifications

(a) Essential

- (i) Ph.D. degree in the subject concerned or other equivalent degree or other published work of an equally high standard.
- (ii) Ten years of teaching and or Research and or Extension in the concerned subject.

(b) Desirable

Other things being equal, a basic professional degree in the faculty concerned is preferred.

2. The posts of Senior Scientist (Rice), Senior Scientist (Horticulture), Professor (Veterinary Pathology) and the Professor (Extension Methods) were notified in advertisement No. 8/78, A.P. Agril. University. Those who had applied previously need not apply again. However if they wish to be considered on the strength of the application already made, they may inform the Registrar A.P. Agril. University accordingly. They may also furnish additional information, if any, relevant to their applications.

3. All posts will carry a scale of pay of Rs. 1500-60-1800-100-2000-125/2-2500.

4. Persons already in service must submit their applications through their employers, sending a copy direct so as to reach the undersigned within the

prescribed date. Selection in their cases will, however, be subject to the employer's agreement to relieve them.

5. Applicants should be prepared, if so required, to appear for personal interview before the Selection Committee at the Headquarters of the University, at their own cost.

6. The persons selected will be on probation for a period of two years on duty within a continuous period of three years.

7. Selected candidates are liable to be transferred to equivalent posts (any where in Colleges or Research Stations) under the University.

8. It is open to the University to fill or not to fill the posts now advertised.

9. Application forms can be had from the Registrar, Andhra Pradesh Agricultural University, Rajendranagar, Hyderabad-500030 on payment of Rs. 2/- in person or through Postal Order uncrossed.

**T. Narayan Reddy
REGISTRAR**

**UNIVERSITY OF HYDERABAD
HYDERABAD**

Advertisement No. Estt. NT/2/79

Applications on the prescribed form are invited for the post of REGISTRAR of the University in the scale of pay Rs. 1500-60-1800-100-2000.

Qualifications, Experience, etc.

At least second Class degree with about 10 years experience of working in a University/Government/Semi-Government/Autonomous Organisation dealing with educational/research/cultural matters in an administrative and supervisory capacity, of which 5 years should be in a senior executive position not below the rank of Deputy Registrar/Controller of Examinations or equivalent. Familiarity with the working of a University or Institution, of University standard and preparation of agenda, minutes, etc. Should possess sound experience of general administration; developmental work, academic matters, examination work, etc. Ability in drafting Statutes, Ordinances, Rules, Regulations, etc.

Age : Not below 45 years.

In addition to pay, the post carries allowances as per University rules which at present are equivalent to those admissible to Central Government Officers stationed at Hyderabad. Retirement benefits admissible as per University rules.

Applications on prescribed form (available on request accompanied by a self addressed stamped (55 paise envelope) with the requisite application fee of Rs. 7-50 (non-refundable) and other documents/certificates should reach the Assistant Registrar (Admn), University of Hyderabad, 'Golden Threshold', Nampally Station Road, Hyderabad-500 001 on or before 18-6-1979.

Candidates called for interview from outstations will be paid [contribution equivalent to return single second class railway fare by shortest route towards their journey expenses. Candidates already in service should submit their application through proper channel. Applications received after the last date or without complete information or without the requisite postal orders are likely to be ignored.

It will be open to the University to consider the names of suitable candidates who may not have applied. Relaxation of any of the qualifications, age, experience, etc., may be made in exceptional cases on the recommendations of Selection Committee. Canvassing in any form for or on behalf of the candidates will disqualify such candidature.

REGISTRAR

**MAHARSHI DAYANAND
UNIVERSITY, ROHTAK
CORRIGENDUM**

Invited applications (through proper channel) for Professor of History & Sociology (1 each) instead of Reader in History and Sociology already advertised in the daily 'Tribune' and 'Indian Express' dated 13-5-79 & 9-5-79 respectively (and published in the current issue of University News on inside cover). Qualifications : Very good academic record, Doctoral Degree, experience of guiding research ten years teaching experience of Post-graduate classes about five years as Reader. Lecturers in Law (2) (a) Ph.D. or high second class LL.M. or any other foreign degree equivalent thereto (b) a candidate having teaching experience may be preferred.

U.G.C. pay scales for these posts with usual allowances & benefit of Contributory Provident Fund. Reservation for Ex-Serviceman/B.C./S.C./S.T. candidates as per rules and no application fee from them. Qualifications relaxable and higher start admissible in deserving cases and internal candidates. Knowledge of Hindi essential. Applications with full bio-data, attested testimonials and crossed postal order for Rs. 10/-, in favour of Chief Accounts Officer, payable at Post Office, Rohtak be sent to Registrar by 15-6-79.

REGISTRAR

**It Pays
to
Advertise
in
University News**

LUCKNOW UNIVERSITY

LUCKNOW-226007

Advertisement No. 8/1979

Applications are invited for the following posts:

Professors in the Grade of Rs. 1500-60-1800-100-2000-125/2-2500

1. One Professor of Botany
2. One Professor in Mathematics
3. One temporary Professor of Statistics.

Qualifications

Essential

1(a) A doctorate in the subject of study concerned or a published work of a high standard in that subject; and

(b) Consistently good academic record (that is to say, the overall record of all assessments throughout the academic career of a candidate) with first or high second class (that is to say, with an aggregate of more than 54% marks) Master's Degree in the subject concerned or equivalent degree of a foreign University in such subject.

Where the Selection Committee is of the opinion that research work of a candidate as evidenced either by his thesis or by his published work, is of a very high standard it may relax any of the qualifications specified in sub-clause (b) of clause 1.

2. Experience of teaching post-graduate classes for not less than seven years and/or having conducted and successfully guided research work for seven years in a recognised Institution and having published work of high standard in the subject concerned.

Preferential

High academic distinctions.

Readers in the Grade of Rs. 1200-50-1300-60-1900

4. Two Readers in Sociology
5. One Reader in Economics
6. One Reader in Hindi
7. Two Readers in Mathematics
8. One temporary Reader in Geology
9. One temporary Reader in Zoology (likely to be made permanent)

Qualifications

Essential

1(a) A doctorate in the subject of study concerned or published work of a very high standard in that subject; and

(b) Consistently good academic record (that is to say, the overall record of all assessments throughout the academic career of a candidate) with first or high second class (that is to say, with an aggregate of more than 54% marks) Master's Degree in the subject concerned or equivalent degree of a foreign University in such subject.

Where the Selection Committee is of the opinion that the research work of a candidate, as evidenced either by his thesis or by his published work is of a very high standard, it may relax any of the qualifications specified in sub-clause (b) or clause 1.

2. Experience of teaching honours/post-graduate classes for not less than five years and published research work of high standard in the subject.

Preferential

Experience of teaching post-graduate classes and guiding research.

Lecturers in the Grade of Rs. 700-40-1100-50-1600

10. Two Lecturers in Sociology

11. One permanent and two temporary Lecturers in Political Science
12. One Lecturer in Hindi
13. One Lecturer in Labour Economics in the Department of Economics
14. Two temporary Lecturers in Chemistry
15. One Lecturer in Business Administration, Faculty of Commerce
16. One temporary Lecturer in Philosophy

Qualifications

Essential

(a) A doctorate in the subject of study concerned or published work of a very high standard in that subject; and

(b) Consistently good academic record (that is to say, the overall record of all assessments throughout the academic career of a candidate) with first class or high second class (that is to say, with an aggregate of more than 54% marks) Master's Degree in the subject concerned or equivalent degree of a foreign University in such subject.

Where the Selection Committee is of the opinion that the research work of a candidate, as evidenced either by his thesis or by his published work, is of a very high standard, it may relax any of the qualifications specified in sub-clause (b) supra.

Preferential

Experience of teaching degree/honours/post-graduate classes for two years.

GENERAL

For purposes of qualifications required for the above posts, the degree obtained in a subject taught in a Department which is subsequently constituted into separate Departments shall be deemed to be degree in the subject concerned for the newly constituted Departments.

Benefits of Provident Fund available as admissible under the rules on confirmation for permanent posts. Period of probation for permanent posts is one year. It is not necessary to fill any/all of the advertised posts.

For the posts of Lecturers, other things being equal preference will be given to Scheduled Castes/Tribes candidates, who are considered fit. Such candidates should indicate in the applications that they belong to Scheduled Castes/Tribes, attaching certificate from the District Magistrate of the District to which they belong. No other certificate for this purpose will be entertained. In case of Scheduled Castes/Tribes candidates interviewed by the Selection Committee, if suitable candidates are not available for appointment to the posts of Lecturers, the Selection Committee may recommend appointment of suitable candidate as Research Associate in the scale of Rs. 700-1300 for a period of three years and these persons could later compete for the posts of Lecturers as and when vacancies occur.

Those who have applied for the above posts at Serial Nos. 2, 4, 5, 6, 7, 10, 11, 12, 13 & 15 in response to our Advertisement No. 9/1977, No. 12/1977 and No. 13/1977 need not apply afresh as their old applications will be considered. Such candidates may, however, intimate their additional qualifications and attainment during this period for

their specialization in the respective fields.

Applications on the prescribed form (available on request, accompanied with a self-addressed envelope of size 23 cm x 10 cm, free of cost, from the Office of the Registrar with recent testimonials, publications etc. should reach the Registrar, Lucknow University, by Monday, June 11, 1979. The candidates who are in service must send their applications through proper channel. Application Forms to outstation candidates will be issued by post upto Monday, June 4, 1979.

Chander Bhan
REGISTRAR

THE MAHARAJA SAYAJIRAO UNIVERSITY OF BARODA

BARODA

Notification No. 1

Applications are invited for the following posts in the prescribed forms which will be available alongwith the details of qualifications and experience from the undersigned on pre-payment of Rs. 2-00 (Re. 00-50 paise for members of Scheduled Caste/Scheduled Tribes) by means of Crossed Indian Postal Order payable to the Registrar, M.S. University of Baroda and a self addressed envelope of 30 x 12 cms. for each post.

I. Oriental Institute

1. General Editor (1 post)

II. Computer Centre

2. Head, Computer Centre (1 post)
3. Systems Manager (Hardware) (1 post)
4. Systems Engineer (Software) (1 post)
5. Programmer (1 post)
6. Programmer (1 post)

Scale

Rs. 1500-60-1800-100-2000-125/2-2500 for No. 1

Rs. 1500-60-1800-100-2000 for post No. 2

Rs. 1100-50-1300-EB-60-1600 for posts Nos. 3 & 4

Rs. 700-40-980-EB-40-1100-50-1200-EB-50-1300 for posts Nos. 5 & 6.

The posts carry usual allowances in accordance with the rules of the University.

The reservation of posts is as under:

1. Scheduled Caste—Post No. 4
2. Scheduled Tribes—Post No. 1
3. Educationally and Socially backward class including nomadic and denotified tribes—Post No. 6

If suitable candidate is not available for the reserved post the same will be filled up by other candidate found suitable.

Application forms will be available upto 22nd June, 1979.

The application should be accompanied by Crossed Indian Postal Order payable to the Registrar, M.S. University of Baroda, worth Rs. 10-00 (Rs. 2-50 for members of Scheduled Castes/Scheduled Tribes) for posts Nos. 1 and 2; Rs. 8 (Rs. 2-00 for SC/ST) for posts Nos. 3 to 6 and should reach this office on or before 30th June, 1979. The candidates if called for interview will have to come at their own expense.

K. A. Amin
REGISTRAR

UNIVERSITY OF HYDERABAD

HYDERABAD-500 001

Advertisement No. Estt. 1/79

Applications on the prescribed form are invited for the posts of Professors, Readers and Lecturers as detailed below for various Schools/Departments/Centres of Studies in the University.

Scales of Pay

1. Professor : Rs. 1500-60-1800-100-2000-125/2-2500
2. Reader : Rs. 1200-50-1300-60-1900
3. Lecturer : Rs. 700-40-1100-50-1600.

Approximate emoluments at the minimum of the scales for Professor: Rs. 2287/-; Reader Rs. 1942/- and Lecturer: Rs. 1286/.

Qualifications & Experience

Professor

A first or high second class Master's degree in the subject concerned and consistently good academic career; a Doctorate Degree and considerable published work of high standard; Ten years post-graduate teaching experience and experience of guiding research work.

Reader

A first or high second class Master's Degree in the subject concerned; A Doctorate Degree and published work of high standard; 5 years experience of teaching in Honours / Post-graduate classes or post-doctoral research.

Lecturer

(i) A Doctorate Degree or research work of equally high standard and (ii) consistently good academic record with first or high second class (B in the 7-point scale) Master's degree in the relevant subject or an equivalent degree of a foreign University.

The Selection Committee may recommend relaxation of any of the qualifications at (i) and (ii) above subject to certain conditions provided a candidate has done research work for at least two years or has practical experience in a research laboratory/organisation or has published work of high standard.

Details of Posts, Broad Areas of Research and Specialisation

1. SCHOOL OF LIFE SCIENCES

Professor (1), Readers (4)

Molecular Biology/biochemical genetics; Neurobiology / Neurochemistry/ Neuroendocrinology; Enzymology; Reproductive & Developmental biology; Membrane biology. Candidates with exceptionally good background in any branch of Life Sciences may also be considered.

2. SCHOOL OF CHEMISTRY

Professors (2); Readers (9) and Lecturer (1) in Physical/Inorganic/Organic/Analytical/Solid State Chemistry/Photochemistry/Physical Methods/Theoretical Chemistry.

3. SCHOOL OF PHYSICS

Professors (2); Readers (4) and Lecturers (2) in Theoretical Physics Quantum Optics, Non-Linear Optics, Statistical Physics, Plasma Physics, Particle Physics. Experimental Physics: Low temperature Solid State Physics; Material Science-preparation and characterization of materials; Solid State electronics; Laser Physics; Surface Physics.

4. SCHOOL OF MATHEMATICS & COMPUTER/INFORMATION SCIENCES

Professor (1); Reader (1) and Lecturer (1) in Computer/Information Sciences.

Professor (1) and Lecturer (1) in Probability and Statistics / Optimal Control/Operational Research.

Reader (1) in Propagation of Electromagnetic Waves; Propagation of Seismic Waves; Rock Mechanics; Fluid Dynamics and Applied Group-theoretic Methods.

5. SCHOOL OF SOCIAL SCIENCES

(a) Department of Economics

Professors (2) in Econometric/Mathematical / Statistical Economics/Institutional Economics/Social aspects of Planning and Development.

Readers (4) & Lecturers (4) in Econometrics/Mathematical/Statistical Economics / Economic Theory / Quantitative Methods/Applied Economics etc.

(b) Department of History

Professors (2) in Social and Economic History/Regional History, Ancient Medieval and Modern.

Readers (2) and Lecturers (2) in Ancient, Medieval and Modern History, Indian and Non-Indian.

(c) Department of Political Science

Professor (1); Readers (3) and Lecturer (1) in Political Theory/Political Development/International Relations and order.

(d) Department of Sociology and Anthropology

Professors (2); Reader (1) and Lecturers (3) in Sociology/Social and Cultural Anthropology.

(e) Centre of Regional Studies

Readers (3) one in Modern Telugu Literature and two in Modern Art and Architecture/Regional Sociology/Socio-economic History.

Lecturers (4)—one in Modern Urdu Literature and three in Modern Art and Architecture/Regional Sociology/Socio-economic History/Regional Economics.

(f) Centre of Human Sciences

Professor (1) in Psychology; Reader (1) in Social Economics and Lecturer (1) in Ecology and Lecturer (1) in Basic Psychology/Social Psychology.

6. SCHOOL OF HUMANITIES

1) Department of English

Lecturers (5)—one in Eighteenth century literature; one in Nineteenth century literature; one in Modern British and American literature; one in Modern literature & Stylistics and one in Commonwealth literature.

2) Department of Philosophy

Readers (2) in Philosophy of Social Sciences/Philosophy of Natural and Exact Sciences/Classical Philosophy.

7. SCHOOL OF ENVIRONMENTAL GEOSCIENCES

Professors (4); Readers (6) and Lecturers (8) in Geology; Geophysics; Meteorology; Hydrology and Oceanography.

Note

The number of posts indicated above is only tentative and is likely to vary depending upon the positions available at the time of selection.

General

For the posts of Lecturers, preference will be given to Scheduled Castes and Scheduled Tribe candidates who are considered fit.

In addition to pay, the posts carry allowances as per University rules which at present are equivalent to those admissible to Central Government employees stationed in Hyderabad. Retirement benefits as per University rules.

Prescribed application forms are available from the Assistant Registrar (Administration) on request accompanied by a self-addressed stamped (55 paise) envelope. Applications with the requisite fee of Rs. 7.50 (non-refundable) in the form of crossed Postal Order drawn in favour of the Finance Officer and other documents/certificates/publications should reach the Registrar, University of Hyderabad, 'Golden Threshold', Nampally Station Road, Hyderabad 500 001 on or before 15th June, 1979.

Those who have applied earlier for the posts of Readers and Lecturers in Modern Art and Architecture/Regional Economics/Ecology in response to advertisement No. Estt/1/78 dated 26-5-1978 need not apply again. However, they may send their latest bio-data and change of address if any, etc. for consideration.

Candidates called for interview from out-station will be paid contribution equivalent to return single second class railway fare towards their journey expenses. Candidates already in service should submit their applications through proper channel. Applications received after the last date or without complete information or without the requisite fee may not be entertained.

It will be open to the University to consider the names of suitable candidates who may not have applied. Relaxation of any of the qualifications, experience etc. may be made in exceptional cases in respect of all posts on the recommendations of the Selection Committee. Canvassing in any form for or on behalf of any candidate will disqualify such candidature.

P. V. George
REGISTRAR

University News

A FORTNIGHTLY CHRONICLE OF HIGHER EDUCATION & RESEARCH JUNE 15, 1979

Dravidian Linguists meet in Calicut



Prof. N. Purushothaman, Acting Vice-Chancellor, welcoming the delegates of the Ninth All India Conference of Dravidian Linguists at the University of Calicut.

**JAWAHARLAL NEHRU
UNIVERSITY**

NEW DELHI-110067

Advertisement No. Aca. III/15/79

Applications are invited for the post of Associate Professor/Fellow in Sociology in the Centre for the Study of Social Systems of the University in the scale of pay of Rs. 1200-50-1300-60-1900 plus usual allowances as admissible to the members of the staff in the Central Universities.

Qualifications

Essential

- (a) Consistently good academic record with at least a high second class Master's degree in Sociology or an equivalent qualification from an Indian/Foreign University;
- (b) A doctor's degree or published work of an equally high standard; and
- (c) About five years experience of teaching and/or research.

Areas of Special interest: any one or more of the following

- (i) Sociology of Modernization and Change;
- (ii) Sociology of Complex Organizations;
- (iii) Sociology of Professions and Occupations; and
- (iv) Industrial Sociology.

Desirable

Some experience in guiding research.

Relaxation in any of the qualification may be made (a) in favour of persons of eminence or of high academic/professional distinction, and (b) in exceptional cases where adequately qualified persons are not available but are otherwise found suitable for the position. It will also be open to the University to consider the names of suitable candidates who may not have applied.

The selected candidates will be expected to participate in the teaching and research programmes in the concerned disciplines in other Schools of the University as well as in the programmes offered in their own Centres of Studies.

Normally appointment of Fellows is made on contract basis for a period ranging from one to three years.

Benefits of C.P. Fund-cum-Gratuity/G.P. Fund-cum-Pension-cum-Gratuity are available as per University rules.

Persons already in employment should route their applications through proper channel.

Second class (Mail) rail fare (both ways) will be paid to candidates invited to appear for interview from outstation by the shortest route subject to the production of rail receipt.

Applications on the prescribed form obtainable free of cost from the University by sending a self-addressed and stamped envelope of 23 cm x 10 cm size to the Deputy Registrar(Academic),

Jawaharlal Nehru University, New Mehrauli Road, New Delhi-110067, should reach him latest by 30-6-79. The candidates who have applied in response to our advt. No. Aca. III/5/78 need not apply again. Their earlier applications will be duly considered. However, if they have anything to add to their bio-data, the same may please be intimated before the closing date prescribed for the receipt of applications.

Candidates from abroad, applying for the position may apply on plain paper (but their applications should reach the University by the last date),

furnishing all the relevant information such as their names; date and place of birth; marital status; nationality; state of domicile; postal and permanent addresses; father's name and address; academic and professional attainments; full details of (a) publications, and (b) research projects undertaken; languages (s) known; details of visits to foreign countries; and the names and addresses of at least two persons well acquainted with the candidate's professional work who should also be requested by the candidate to forward to the Deputy Registrar (Academic) confidential report concerning the candidate.

**Birla Institute of Technology and Science
Pilani (Rajasthan) 333031 India**

Advertisement No. FR/1/79

BITS has several faculty openings at various levels in the following disciplines :

Chemical, Civil, Electrical and Electronics, Mechanical Engineering; Computer Science; Instrumentation; Biological Sciences; Chemistry; Mathematics; Physics; Pharmacy; Museum Studies; Science and Technology Development; Economics; Management; Languages (English, French, German, Russian, Sanskrit & Hindi); Humanistic Studies.

BITS is a privately supported all India technological institution of higher learning. It is a 'Deemed University' offering, degrees in the above disciplines at undergraduate, postgraduate and doctoral levels. It has pioneered several educational innovations.

The institute is poised to offer appointments under both academic and research designations, short term appointments through its visiting and adjunct faculty arrangement, and also to fresh graduates and young persons with an intense faculty development programme, which is linked with the growth of the Institute in terms of its priorities.

The institute offers latest U.G.C. salary scales. Those who are interested may ask for a booklet entitled "Introducing BITS to Prospective Faculty" for all details and for the format of the application form.

It may be noted that this advertisement carries no specific last date. In order to be useful for both parties the advertisement will be valid for one year from the date of advertisement and the Institute will review cases received during the year more than once.

**A. N. BHARGAVA
REGISTRAR**

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*Opinions expressed in the articles
and reviews are individual and do
not necessarily reflect the policies
of the Association*

Hony. Editor : ANJNI KUMAR

Internal Management of Universities

[Contributed by the University of Burdwan]

The Internal Management of Universities has assumed great importance during the last decade due to the developing aspects of Universities.

The internal management conceives four most important areas:

- (1) Management of Teaching and Research
- (2) Management of administrative sections
- (3) Management of Students' problems; and
- (4) Management of staff (other than teaching)

The management problems of these four divisions of the Universities are felt as much by the authorities as by the individuals concerned.

The Universities these days are required to tackle problems of teaching and research on equal or greater measure like student problems. The administration of teaching departments is as much a source of conflict as are the other problems. The emphasis on management is now shared more by the teachers than by the students.

The following kinds of trend on the part of faculty members are discernible in greater or lesser degree in most Universities :

- (i) the neglect of teaching
- (ii) the loss of interest on programme of academic activities
- (iii) deficiency of academic standard
- (iv) lack of responsibilities of academic personnel and their role in faculty matters
- (v) poor quality of lessons
- (vi) indifferent attitude about the results of teaching
- (vii) teacher-student relations
- (viii) outdated system of assessment.

Every major University is faced with the problems of academic administration in a big way. Those involved in the business of academic administration are not serious enough to understand their responsibility or duty. There are of course exceptions to this general trend.

There are other problems within a teaching department as between the Head of a Department and other staff members. The consequences of all these problems are seriously affecting the programme of teaching and research in Universities fast.

The U.G.C. and the authorities of the Universities have failed to prescribe even the minimum of duty hours for teaching staff and records of average working hours per week will reveal that most of the teachers have very low rates of working periods. The activities of research work, it is argued, take away the bulk of their time. Whether the research work of faculty members will justify the

lowering of instructional or teaching load is a matter for scrutiny. This has created a gap between the teachers and the learners. The demands of students for greater emphasis on teaching hours cannot be ignored. The University authorities helplessly look on these affairs as no norms are available. The academic management has thus assumed a bigger problem for the Universities.

In the field of administration, the situation is precarious. The internal management of Universities has become these days instances of incompetence due to a variety of reasons. The chief among them are : internal dissension, poor quality of administrators, interference with the administration by outsiders, low morale of staff members, neglect of work, recruitment policy of staff, and last but not the least, growing tendency of indiscipline among staff members.

It is not the purpose of this note to identify the cause of the deterioration in the administrative structure. Various other factors have contributed to the deficiencies in the internal management of Universities. The deterioration may be due to the dearth of the right type of men for the right type of job.

Internal management of Universities is generally modelled on the pattern of the Acts and Statutes adopted by the various States. The basic structure, however, follows a uniform pattern, namely, a body of University administrators presided over by the Chancellor. The Vice-Chancellor and other functionaries have specific statutory functions. The model Act for Universities suggested what should be the position of the administrators in relating to the internal management of Universities. The pattern follows that there should be a Vice-Chancellor with clear functions and responsibilities prescribed under the Acts. There may be Pro-Vice-Chancellors, Deans of Faculties and other Statutory officials like the Registrar, the Finance Officer, the Inspector of Colleges, the Controller of Examinations, Dean of Students etc. The report of the Committee on Governance of Universities and Colleges also suggested the model for Universities' administration, the organisation of teaching departments, the procedure of students participation and various other details.

With the expansion of the activities of Universities the structure and the pattern of administration and management of Universities should be changed to cope with the manifold problems of University administration. The role of Universities in relation to the teaching community, the students, the affiliated colleges, the constituent colleges and last but not the least, the internal management of staff members has become more complex in the context of the various developmental activities undertaken during the last few plan periods. The functions of Universities have these days become more or less those of participation among different members of the University. The ideas of management of University business in the various stages of its activities are changing faster. The functions of heads of Departments constituting the governance of Universities management are gradually taking shape

to promote a sense of participating activities among the students, teachers and others connected with the day to day affairs of the Universities. The academic administration, the role of teachers, the feeling of autonomy of teacher in academic matters, the touchy problems of students participation in the activities and functions of Universities are all so inter-mixed that the management style has to be re-oriented to include not only the statutory administrators who are responsible for the day-to-day administration but also those who are directly or indirectly contributing to the progress, achievement and other activities of the Universities. It is not adequate now to imagine that the set pattern of management as are found incorporated in the statutory Acts or provisions of Universities is workable. The set pattern suffers from certain deficiencies in that it does not give importance to functionaries other than those who are statutorily appointed. The needs of the society, the community and the students in general now require that the role of statutory functionaries should be so oriented as to allow for participation either in a statutory manner or in some other form of students and teaching community so as to promote a sense of belonging with the Universities administration. Various forms of such participation have been suggested in the reports of the Commission or Committees from time to time, but it has been our experience that practical needs of Universities do not fit in with the pattern so suggested or which is current. The authorities of the Universities which statutorily govern the Universities and the authorities in the internal management should have greater and significant role in the administration and such administration should invite participation by the students and other components in its internal management in a manner that ultimately the question of administration of the Universities by a few is not doubted. The thinking that the administrators manage the Universities and the internal management rests on certain permanent executives has to be changed with a view to providing for a larger involvement of different sectors which do not normally come within the scope of internal management of Universities. It should be possible to evolve a model for the internal management of the Universities which gives the system a mobility, a greater awareness, a channel for communication and a sense of belonging with the administration. In order, therefore, to execute a reform in the internal management which we believe would go a long way in removing the distrust on internal management of Universities, there should be real participation in decision making and not merely consultative bodies, in the fields of administration—academic and general, and more particularly in the instrument of examination. The students have the greatest distrust and dislike for administration in matters of syllabi, course structure, pattern of instruction, examination and other activities in the affairs of the Universities.

The reform of internal management pattern is, therefore, to be taken up on priority basis. □

Universities and National Development

—A Status Report and Future Projections in Examination Reforms

V. Natarajan*

Examination Reform is in a 'curious-fix' in universities in our country. On the one hand, everyone is convinced that it is necessary to implement reforms in respect of introducing a system of continuous internal evaluation, question banks, grading in the place of marking, semester system etc. Few universities have gone systematically introducing this as a 'package' preparing teachers, students and others in the system adequately while many of them introduced these one in 'isolation' from the other, without adequate preparation and thinking. On the other hand, few other universities which are genuinely interested in bringing about changes in examination system are perplexed at the way things have gone. It is therefore necessary at this point in time to take stock of the situation and begin to decide on future courses of action.

Examination reforms in real sense is three decades old in higher education. Radhakrishnan Commission in 1949 laid foundation and UGC (1958) continued with it with a few seminars, workshops, committees and brought out brochures.

In January 1971, Association of Indian Universities—then called Inter University Board of India & Ceylon, organized a seminar on examinations to call for vigorous and sustained action in reforming examinations. One explanation at any rate seemed to be that recommendations and proposals made by Committees and seminars on this subject are not always detailed or concrete enough. The seminar therefore took particular care to see that its own discussions did not lose touch with the realities of the situation and that whatever proposals it made were of a kind that could also be implemented. In plain words, the seminars went somewhat beyond a mere call to action. It also tried to evolve, as far as it could, a set of practical and practicable recommendations. In the opinion of the seminar the imperative need was to improve upon the existing system and streamline it by ensuring greater reliability as well as greater objectivity. In this connection, amongst other recommendations, the seminar recommended introduction of internal assessment, re-designing of question papers, relative ranking (the percentile basis of awards), use of mechanical aids in examination works, introduction of semester system of examination and establishment of a well staffed unit at the national level for research into problems of examinations and also to promote the establishment of similar units in the various universities and colleges and undertake training of

people in the new techniques, locally as well as nationally.

In 1974, a concrete step in this direction was taken by the University Grants Commission by convening four zonal workshops to discuss problems relating to examination reforms, autonomous colleges and postgraduate education. The workshops were held between July and November, 1974 at Madurai, Ahmedabad, Chandigarh and Bhubaneswar. The recommendations of the workshops on examination reforms were brought out in the form of a brochure. The workshops broadly endorsed the UGC scheme of examination reform and accepted the philosophy outlined in 'Examination Reform—A Plan of Action'. However, various issues regarding the system of grading could not be discussed in these workshops in depth. It was, therefore, decided to convene zonal workshops to discuss the objectives and mechanics of the grading system in all its ramifications. The workshops were held at the Universities of Delhi, Panjab, Bombay, Madras, Calcutta and Jabalpur.

The main emphasis is on the following aspects of examination reforms :

- (a) Continuous sessional evaluation as a supplement to the present final examination.
- (b) The development of question banks in order to eliminate some of the shortcomings of setting up examination papers and as a means for revision and modernization of courses of study.
- (c) Introduction of grade system instead of present marking system in order to increase reliability and bring about better comparability among different subjects.
- (d) Introduction of the semester system in order to have greater flexibility.

STATUS REPORT

1. Present position of Internal Assessment in Indian Universities

The Implementation Committee on Examination Reform at its meeting held in New Delhi noted that 67 universities including 14 agricultural/technical universities and 7 institutions deemed to be universities were having sessional evaluation at different levels. Of these 46 universities and institutions give a weightage of 25 percent or more for sessional assessment in respect of some of the courses or all the courses. The Committee reiterated its earlier view that marks/grades of sessional assessment and

*Project Officer (Exam), AIU, New Delhi.

external examination should not be totalled up. In any case, they should be shown separately if for unavoidable reasons they are added for determining aggregate/overall grade. The name of college/institute should also be shown in the grade card. An analysis of the available data with the Research Cell, Association of Indian Universities gives the following picture with regard to marks allotted for internal assessment.

There is a range from 0 to 50% marks. These may be classified under six different categories. They are :

- | | |
|---------------------|---|
| Category I | Universities which award internal assessment marks from 0–10%. |
| Category II | Universities which award internal assessment marks from 0–20%. |
| Category III | Universities which award internal assessment marks from 0–30%. |
| Category IV | Universities which award internal assessment marks from 0 to 40%. |
| Category V | Universities which award internal assessment marks from 0–50%. |
| Category VI | 100% internal assessment. |

I Category

1. Dibrugarh University (10% for pre-degree courses).
2. Mysore University (10% for U.G. courses in some of the faculties only).

II Category

1. Berhampur University (20% for intermediate courses).
2. Calicut University (20% for Zoology).
3. Gurunanak Dev University (15% to 20% Chemistry Department, 20% Town Planning)
4. Mysore University (20% for P.G. courses).
5. Meerut University (20% for P.G. courses).
6. Sambalpur University (20% PU, BA, BSc & B. Com courses).
7. Saurashtra University (20% & more for Science, Commerce, Medicine, Education and Law).
8. Shivaji University (10% to 20% for pre-degree, B.Sc., B.Com, BE and M.Sc., courses).
9. Udaipur University (20% for all Departments).
10. Utkal University (20% for all UG courses).
11. Viswa-Bharati (20% for all Departments).

III Category

1. A.M.U. (30% for subjects in which there is a practical examination).
2. Allahabad University (25% for all courses) in atleast five university departments.
3. Andhra University (25% for the M.A., M.B.A. & M. Com courses in most of the departments).

4. B.H.U. (15 to 33% for all P.G. Departments)
5. Calicut University (25% for Chemistry courses, 35% for Botany and 30% for History).
6. M.S. University of Baroda (30 to 100% P.G. course, 30% for U.G. Arts, Science, Commerce and Medicine).
7. N.E.H. University (20% to 30% for Economics, Political Science, History, Philosophy and Life Sciences).
8. Osmania University (25% for all P.G. courses).
9. Sardar Patel University (30% for all U.G. courses).

IV Category

1. A.M.U. (40% for subjects in which there are no practical examinations).
1. Calicut University (40% for Physics, Commerce).
3. Gauhati University (31%–40% for all P.G. courses).
4. Jadavpur University (31%–40% for Engineering & Technology Science courses).
5. Panjab University (20–40% for eleven examination viz. B. Sc. (Engg.) B.Sc, Chemistry, Engg. & Tech), B.Ed., BP Ed., MPed. B. Com. (Hons.), Dip. in Marketing Management; Dip. in Personal Management and Labour Welfare; Master of Commerce.
6. University of Poona (40% for all P.G. courses).
7. S.N.D.T. Women's University (33–40% for Education, Home Sc., Library Science and Nursing).
8. I.S.M., Dhanbad (25–40% for all departments).

V Category

1. A.M.U. (50% for all Practical courses).
2. Andhra University (55% for M.Sc. courses only).
3. University of Jammu (25 to 50% in all Departments).
4. Madurai University (11.6% to 50% for a number of P.G. subjects, B.A., B.Sc., Special and BBA).
5. Meerut University, (50% for P.G. & M. Phil courses).
6. Sardar Patel University (30–50% for P.G. courses).
7. C.I.E.F.L., Hyderabad (40–50% in all departments).
8. Gujarat Vidyapeeth (50% for Bachelor of Social Science).
9. University of Roorkee (50% in all faculties).

VI Category

1. J.N.U. (50% to 100% in all departments).

Percentage of marks for Internal : External
Assessment in Engineering courses (from
the information received for
semester system)

Name of University/Institution	Internal	External
1. Andhra University	50%	50%
2. University of Mysore	50%	50%
3. Indian School of Mines, Dhanbad	30%	70%
4. Birla Institute of Technology & Science, Pilani	100%	100%
5. J. N. Technological University, Hyderabad	100%	0%
6. Orissa University of Agriculture and Technology	100%	0%

Note ; In the Orissa University of Agriculture & Technology, if the V.C. considers necessary to get the papers evaluated by external assessment in any course, he may do so in such a manner as he deems proper.

2. Present Position of Question Banks in Indian Universities

There is nothing revolutionary in the idea of a question bank. Stores or banks of questions have been in existence for a long time. Over the years, various universities and examining boards have produced a large number of questions in many different subject areas; these in effect constitute a series of banks from which questions are drawn for examining purposes and to which questions are added from time to time.

The Examination Bulletin describes the Question Banks as follows :

“A Bank of items (questions) of known technical values can be built up for future use. It might, in practice, prove of value to arrange for item construction to be a more or less continuous process. The construction of written paper can then become a matter of judging the suitability of items of known technical value from a bank of items. Items can be weeded out as out of date over a period of time. Further it can be said that new questions should be tried out and statistical evidences for its facility, discrimination ascertained, it is absolutely necessary that the banks would have to be large to be of value.”

The concept of question banks is more relevant at the undergraduate level and in the affiliating type of university. There should, however, be no objection if the university departments develop question banks at the postgraduate level. It is to be noted that question banks are to be developed by a university on its own keeping in view the objectives of courses of study. However for the benefit of a large number of universities which cannot afford to have question bank on their own, a central agency

must produce question bank for identified core subjects at first degree level.

The Association of Indian Universities undertook Question Banking as a development project two years ago and has since successfully built up initial question banks in the First Phase in 10 subjects, namely, Mathematics, Physics, Chemistry, Botany, Zoology, History, Geography, Psychology, Commerce and Economics at the First degree level. Nearly 60,000 questions/items in these subjects are available both in the form of 8"×5" cards in trays and also in the form of a book series. The whole development project was designed with systems approach involving the eight steps namely, 1) defining the need, 2) stating the goals and objectives, 3) listing the constraints, 4) designing alternatives, 5) selecting an alternative, 6) implementing, 7) evaluating, and 8) refining. As far as the 1st Phase is concerned the stages of implementation, evaluation and refinement are being gone through. More than 8000 teachers from 62 universities have been involved in preparation and prevalidation of these banks.

At the same time it was felt that a Second Phase involving the following subject areas must be taken up in stages for the development of initial question banks. The subjects chosen are Strength of Materials, Automobile Engineering, Electrical Power System, Anatomy, Physiology, Pharmacology, Constitutional Law, Law of Contracts, Sociology, Political Science, Foods and Nutrition, Library Classification, English Language and Literature, Mathematics (PG) and English Language and Literature (PG). Three main sources from which questions/items were collected included:

(a) from specially conducted question bank workshops in various universities/colleges;

(b) from teachers and item writers from all over the country;

(c) from the past examination papers of universities in these subjects.

These questions/items were then prevalidated with a checklist of criteria for good quality questions/items and provided with basic technical values like:

(a) Bibliographic coding (reference number)

(b) Subject

(c) Topic

(d) Class for which it is meant

(e) Type of question

(f) Objective tested by the question/item

(g) Time for answering

(h) Marks allotted.

Thus a bank of items/questions of known technical values has been built up for future use. It might in practice prove of value to arrange for item construction to be a more or less continuous process. The construction of written papers can then become a matter of judging the suitability of these items/questions of known technical values from the bank. Items/questions can be weeded out as “out-of-date” over a period of time. These are the questions/items who do not satisfy the criteria regarding facility

value and discrimination index. These banks are made sufficiently large so that answer banks are impossible to come out. As Scriven (1967) has eloquently argued these banks provide not just material for terminal evaluation but also for continuous assessment and individualised examining.

A Monograph on Question Banking for Universities is already in circulation and this Monograph describes fundamental principles, outcomes and uses of a Question Bank pre and post-validation of questions/items to enable universities and teachers to use the question banking books and also to launch upon their own Question Banking project. Along with this series on the question banking, an exclusive Monograph on Question Banking in English Language and Literature is being brought out highlighting the concepts of question banking in English Language and Literature at both undergraduate and post-graduate levels.

The Implementation Committee on Examination Reforms at its meeting held on 3rd May, 1978 at the University Grants Commission noted with satisfaction that the scheme of question banks had picked up further during the year 1977-78.

As far as the information with Research Cell, Association of Indian Universities is concerned, the question banks in the various subjects at the graduate and post-graduate levels have been prepared at the following 25 universities:

Berhampur, Bombay, Calicut, Gauhati, Gujarat, Jabalpur, Kumaun, Madras, Madurai, Marathwada, Meerut, Mysore, North-Bengal, Osmania, Panjab, Poona, Rajasthan, Sardar Patel, South-Gujarat, Saugar, SNDT Women's, Utkal, Sri Venkateswara, Haryana Agricultural University and Punjabrao Krishi Vidyapeeth, Akola.

The following universities are considering the question of developing question banks:

Calcutta, N.E. Hill, Shillong, Punjabi, Sambalpur, Gwalior, Ranchi, Patna, Saurashtra and Marathwada Agricultural University.

3. Present position of Grading in Indian Universities

There are different grade point systems followed in various universities in India. Available information with the Research Cell, Association of Indian Universities shows that 44 universities in the country have adopted the grading system. Some of these universities have the grading system only in certain faculties. Even in universities which have adopted the grading system different grade point systems are followed.

They are eleven point, ten point, nine point, seven point, six point, five point and four point-grade system. Some universities are still following the marks system and they have not yet started adopting grading system. Details of grading systems of various universities according to their point scale are given below:

I. Eleven point grading

1. M.S. University of Baroda: Only in the fol-

lowing faculties, eleven point grade system is followed:

(a) Faculty of Engineering and Technology, (b) Faculty of Law, (c) Faculty of Education, (d) Faculty of Psychology. The grades and their corresponding points are:

Grades: A+; A; A-; B+; B; B-; C+; C; C-; D; E;

Points 10 9 8 7 6 5 4 3 2 1 0

II. Ten point grading

1. J.N.U. New Delhi: The students of this university are graded by the teacher on the following ten point scale:

Grades: A+ A A- B+ B B- C+ C C- F;

Numerical Value 9 8 7 6 5 4 3 2 1 0

III. Nine point grading

1. J.N. Technological University: The Students of this University are classified into nine groups based on the marks as shown below:

Marks	Letter grade	Grade point
91-100	A+	10
81-90	A	9
71-80	A-	8
61-70	B+	7
51-60	B	6
41-50	B-	5
31-40	C	4
21-30	D	3
Below 30	E	2

IV Seven point grading

The following are the universities adopting seven point scale:

1. Agra University
2. Tata Institute of Social Sciences
3. Madras University
4. South Gujarat University
5. Vikram University
6. S.N.D.T. Women's University
7. University of Poona
8. Madurai University

A general pattern of seven point grade system is given below:

Percentage of marks	Grade	Grade point
88-100	O (Outstanding)	6
70-75	A (Very Good)	5
60-69	B (Good)	4
50-59	C (Fair)	3
40-49	D (Average)	2
30-39	E (Below average)	1
0-29	F (Poor)	0

V. Six point grading

In every course taken by a student he/she is assigned a grade based on his/her combined performance in all the assessment. These grades are described by the letters : A, B, C, D, E, F which carry a qualitative assessment as well as a number equivalent called the grade point as given below:

Qualitative Grade	Grade	Grade point
Excellent	A	10
Good	B	8
Fair	C	6
Satisfactory	D	4
Poor	E	2
Very Poor	F	0

VI. Five point grading

The following are the universities adopting five point scale:

1. Aligarh Muslim University
2. Andhra University
3. A.P. Agricultural University
4. G.B. Pant University of Agriculture and Technology
5. Jadavpur University
6. Some faculties of M.S. University of Baroda
7. Panjab University
8. Sardar Patel University
9. Saugar University (UG Courses only)
10. Udaipur University
11. B.I.T.S.. Pilani
12. C.I.E. & F.L. Hyderabad
13. I.I.S. Bangalore
14. I.I.T., Kanpur
15. I.I.T., Delhi
16. Tamil Nadu Agriculture
17. Marathwada Agriculture
18. Punjab Rao Krishi Vidyapeeth
19. J.N. Krishi Vishwavidyalaya
20. C.S. Azad University of Agriculture & Technology (for U.G. courses only)

There are about two or three forms of five point grade system. They are given below:

(I) %of marks obtained	Grade	Significance	Points
91—100	A	Excellent	4
80—89	B	Good	3
70—79	C	Fair	2
60—69	D	Pass but not satisfactory	1
60	F	Failed	0

(II) Grade	Classification	Grade point
A	Excellent	5
B	Very good	4
C	Good	3
D	Fair	2
E	Unsatisfactory	0

(III) Letter Grade	Performance	Grade point
A	Excellent	10
B	Good	8
C	Fair	6
D	Poor	4
E	Exposed	2

VII. Four point grading

The following are the Universities adopting four point grade system.

1. Gujarat Agricultural University
2. C.S. Azad University of Agriculture and Technology (only P.G. courses)
3. Udaipur University (only P.G. courses)
4. Panjab University

The grade system in these universities are assigned by the weighted score as follows:

Grade	Significance	Value
A	Excellent	4
B	Good	3
C	Pass	2
F	Failure/Absence	0

From the available information, it is noticed that the following Universities are still following the marking system :

1. Indira Kala Sangeet Vishwavidyalaya
2. Meerut University
3. M.S. University of Baroda
4. Mysore University
5. Osmania University
6. Sri Venkateswara University
7. Saurashtra University
8. University of Indore
9. University of Jodhpur
10. University of Bombay.

Semester system is in vogue in 68 universities, 5 institutions deemed to be universities and all the 14 agricultural and technological universities. Some of the agricultural universities are on the trimester system.

It is not more than 10-12 universities that the unit system of courses has been introduced. In a fairly large number of universities, the semester system is being tried out in the professional and specialized courses only.

STATUS REPORT AND FUTURE PROJECTIONS OF THE RESEARCH CBL (EXAMS)

A. Research

1. Projects already completed

- *1. A Scientific and Rational design of Grading System
 - *2. A Scientific and Rational design of Question Banking System
 - *3. A Scientific and Rational design of Internal Assessment System
 - *4. An investigation into test and item analysis
 - *5. A Scientific and Rational design of Semester System
 - *6. An Investigation into practical Examinations
 - *7. A Scientific and Rational design of question banking in English Language and Literature
- *Monographs giving detailed analysis of these Researches have been published already.*

2. Projects in progress

- 8. An investigation into Aptitude/Admission tests for various courses
- 9. An investigation into sample-free item analysis techniques
- 10. Syllabus analysis
- 11. Moderation procedures and grace marks in examinations

3. Proposed Research Projects for the Sixth Five Year Plan Period

- Areas
- (1) Curriculum (improving, designing and restructuring)
 - (2) Forms/Methods of Teaching/Learning
 - (3) Validity/Reliability Studies on University Examinations
 - (4) Cost analysis of university examinations
 - (5) University administration and structure

B. Development

1. Projects already completed

**Phase I—Question Banks in 10 subjects at the First degree level (Mathematics, Physics, Chemistry, Zoology, Botany, Psychology, Geography, History, Economics and Commerce)*

**Phase II—Question Banks in 3 subjects at the First degree level (Political Science, Foods and Nutrition and Sociology)*

**A Book Series one in each subject has been published.*

A system on cards in Kardex trays is also available.

2. Projects in progress: **Phase II—Question Banks in 10 more subjects at First Degree level (English Language & Literature, Library Classification, Constitutional Law, Law of Contracts, Anatomy, Physio-*

logy, Pharmacology, Electrical Power System, Automobile Engineering and Strength of Materials) and 2 at Postgraduate Level (English Language and Literature and Mathematics) are being developed.

**A book series one in each subject will be published in a phased manner from now.*

3. Proposed projects for the Sixth Five Year Plan

1) For the subjects in phase I, 'field trial' will be undertaken (to find item facility and item discrimination) at various universities.

2) Comparison of results of (1) in various universities.

3) Phase II subjects will be completed by March, 1979

4) Further subjects will be taken up for the development of Question Bank phase III during the Sixth Plan.

5) For the subjects in phase II, field trial will be undertaken from March 1979.

6) Addition to phase I and phase II will also be undertaken.

C. Case Studies

Projects already Completed

The following are the topics in which thirteen case studies were conducted and have been reported in the form of three Research Abstracts:

Research Abstract-I

First Study—On the optimum number of choices in Multiple choice items.

Second Study—The number of options as a variable in multiple choice items.

Third Study—A comparative study of Facility and Discrimination values of multiple choice item tests with varying options.

Fourth Study—Facility value and Discrimination index of supply type questions.

Research Abstract-II

Fifth Study—On the reliability of ratings in interviews.

Sixth Study—Question choice in examinations

Seventh Study—Simplified methods of test and item analysis

Eighth Study—A comparative study of reliability of objective type examinations.

Ninth Study—A comparative study of reliability of choice type examinations.

Research Abstract-III

Tenth Study—Computer generation of equivalent multiple choice items.

Eleventh Study—Computer in storing and retrieving question banks.

Twelfth Study—Random Matrices Generation.

Thirteenth Study—Computer programme for analysis of objective type test.

- 2) Analysis of examination results
- 3) Operation of question banks

Project in progress

- 4) Effectiveness of admission procedures
- 5) Experimental quality control of selection type items
- 6) Computer in examinations

D Training & Extension

Work Done: 1) Training courses in question Banking, Internal Assessment, Grading and Semester System for staff of universities/colleges/institutions. In all nearly 120 such courses have been conducted in as many as 40 universities.

2. Training courses for administrators in the Examination sections in universities.

In progress: 1) A number of training courses in Question Banking, Internal Assessment. Question banking is being organised and conducted in various universities.

2. Workshops for implementation of Question Bank are being organised.

Proposed work during the Sixth Five Year Plan

1. Short duration courses/workshops at various universities.

2. Leadership training programmes of Faculty/Administrators in various universities in the areas of Question Banking, Internal Assessment/Grading, Semester System, Restructuring of courses etc.

3. Special workshops for staff of Examination Reform Cell and units.

4. Special Workshops for Boards of Studies Members/Controllers of Examinations.

5. Correspondence Courses (Basic, Intermediate and advanced level) in the area of Evaluation to staff from various universities with 'contact' programmes. This will be started from April, 1979.

E. Information Dissemination

Work already completed

1. Select Bibliographies/documentation in the areas of Question Banking, Internal Assessment/Grading, Test and Item Analysis.
2. Monographs in the areas Question Banking, Grading, Internal Assessment and Test & Item Analysis, Question Bank on English language & Literature.
3. Question Bank books in 10 subjects phase I 3 subjects phase II.
4. Publishing other titles :
 - a) The Management of Examinations
 - b) Towards better questions (Item 'Writers' Cookbook)
5. Monographs in the areas of (a) Semester system for universities, (b) Practical Examinations.

In progress

1. (a) Aptitude/Admission test

b) Sample free item analysis.

2. Question Bank books in 12 more subjects (a) English Language & Literature (b) Library classification, (c) Law of Contracts (d) Anatomy (e) Physiology (f) Pharmacology (g) Electrical Power System (h) Automobile Engineering (i) Strength of Materials (j) English Language and Literature (PG), and (k) Mathematics (PG).
3. Publishing other titles : (a) Computer in Examinations.

Proposed work during the Sixth Five Year Plan

1. Monographs as detailed in (1) above
2. Question Bank books in the 12 subjects mentioned in (2) above.
3. Updating 'editions' of Question Banks already published.
4. Abstracts
5. Bulletin
6. Starting a 'Journal on Evaluation in Higher Education'

F. Consultancy & Services

Already completed

1. Analysis of examinations of Delhi, Madurai, Madras and many other universities.
2. Helping UPSC, AIACHE, CBSE, NCERT in solving problems.

In progress

1. Analysing examination results of universities.
2. Helping UPSC, AIACHE and Staff Selection Commission, in their work.

Proposed work during the Sixth Five Year Plan

1. designing, developing courses for universities
2. designing admission tests
3. designing systems (grading/internal assessment semester)
4. computer analysis of examination marks. ☐

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Universities and National Development

—Linkage with Environment

R. Sudarsanam*

There is no gainsaying the fact that the universities as a generator of new technologies, a source of broader horizons, a focus for modern organization and management and new behavioural patterns should get directly involved in the processes of National Development. In practice, it amounts to saying that the universities should give up, if it has not already done, an ivory-tower attitude of isolation and detachment from the seething life, its expectations, needs and problems outside the portals of the universities, and become very much part of it, the environment which feeds and sustains the universities in all its activities. In this, the universities have to remember two basic things : (a) The universities identify the immediate and distant needs of its environment (the people, the region, the nation and all their institutions), discover or develop ways and means of fulfilling them, make available the means wherever the needs exist and help in the peaceful transformation of the 'needs-affected' situations into 'needs-fulfilment'. (b) All the universities are service-institutions at the national and regional level and as such, are to behave cooperatively and not competitively, which means that the universities serve to wean the people of regionalism and parochialism and to develop democratic means to fight against any forms of self-interested exploitation, aggrandisement, etc. It is proposed here to take up these two things briefly, and see what we can do about them.

The first deals with the need-fulfilling functions of the University. The universities normally attempt to discharge this function through three-fold activities, viz. teaching, research and extension education. The Tamil Nadu Agricultural University, for instance, has implemented since 1972, trimester system of teaching to suit the needs of the rural students and to develop and offer suitable skill-based content courses covering the whole of modern agricultural technology. Exercises in curricular revisions take place every three years in order to update the courses, to provide a number of optionals and alternatives and to respond to new needs in the society. Even the courses offered in the departments in the Faculty of Basic Sciences and Humanities—departments parallel to those in general universities, have been formulated in relation to the specific needs of the students, and the nature of the subjects. For instance, English is taught as a library/source language for learning science and technology through the medium of English while Tamil (Regional language) as a language of communication for extension education.

Similarly, every research project in progress in Tamil Nadu Agricultural University is formulated in

terms of felt-needs ; in certain areas the 'needs' are identified by the faculty members and in others, by the staff working in the extension wing, and other institutions of the university like the Farm Advisory Council, the Extension Education Council and the Research Council. Majority of the research projects are 'applied' in nature and 'time-bound' ; while, a few are related to 'fundamental' issues. Again, referring back to the illustration of the work of departments of English and Tamil—I choose them because to many, they will appear to be irrelevant in agricultural universities, their research projects are (1) Sociolinguistic studies of the farmer's language (2) A study of the linguistic factors in successful classroom and extension educational communication (3) Activity method for teaching study skills and language skills for the most backward students. This is only to indicate how suitable need-based curricular exercises are possible and necessary to serve the objectives of National Development.

Every agricultural university will have a well developed network of agencies for carrying out extension education activities. The Farm Advisory Council acts as a two-way channel between the 'needy' farmers and the 'needy' Scientists, the 'needs' of the farmers being immediate solutions for their problems, and the 'needs' of the Scientists being 'the field-problems' requiring to be tackled through research, the farmers' training centres offer location-specific skill-based training programmes (one day training to 3-5 days training) for the farmers.

Well, my interest in giving a glimpse of the activities of the Agricultural University is only to show how the agricultural universities, in general, are completely involved in understanding their environment, their opportunities, resources and constraints in the processes of its development and, in turn, in the ways and means of national development. Incidentally, one may note that all these activities—teaching, research and extension education get linked up with the environment in an integrated manner.

The general or conventional universities can certainly or should necessarily develop similar ways and means of linking themselves with their immediate environment functionally and the national development ultimately. But then, the general universities in the given region do not have any identified roles like those for agricultural universities. Further, majority of those regional universities, are of the affiliating type with their consequent dilution of their effective influence owing to multiplicity of controlling heads—governmental, political, social and managerial. So, the first thing is (a) to identify specific roles for each university in a region, in terms of 'felt-needs' other than in agriculture and allied subjects, (b) to help the universities to diversify their

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teaching (and curriculum), research and extension education activities (c) to work in cooperation with one another, central institutes, industries, Government's developmental agencies etc. for giving the necessary national perspectives for our students and for our National Service Scheme activities, work experience programmes etc, and (d) to demark these functions in concrete forms in respect of autonomous institutions also.

What is required is not only inter-disciplinary, need based activities but inter-university, inter-institutional cooperation in identifying specific roles for one another in a given region and cooperating with one another in discharging these roles without any overlap, duplication or competition. As a number of developmental areas have already been identified by the governments at the State and National levels, it would not be difficult for all the universities in a region to sit together and come to an understanding. This will incidentally develop a positive linkage between the universities and the State and the Central Governments leading to a recognition of the utility of the universities and a refusal to use financial controls for eroding the autonomy of the university. A fruitful interdependence between the universities and the Government may emerge out of this, paving way for greater freedom for the universities from political interference, and for recognition of the value of academic standards, merit and respect for excellence. Until the roles are identified, and suitable curricular and research programmes are initiated, the public apathy in respect of university education and management, for values for higher excellence and merit and for the students' false notions as to the employment value for their degrees will continue.

I do not advocate that all is well with the agricultural universities; I mentioned this only as a starting point to deal with the problems of developing a meaningful and mutually benefiting linkage between the universities and the immediate environment. In the case of agricultural universities, it consists of the resources, opportunities and the needs of its clientele, the farmers. But one of the things that is overlooked in agricultural universities and general universities alike relates to (a) the needs and problems of the students as learners (class room climate, large classes/small classes etc.) in terms of their socio-economic backgrounds and (b) their needs to inculcate new value-systems essential for creating, sustaining and developing an awareness for and a means of national development. This, I consider, is very important as otherwise what will stay with us will be enlightened regionalism, baseless prejudices anti-secular conservatism and societies of acritical adaptive sub-human persons. So what is required is not a prescriptive or descriptive forms of teaching but one of generative-transformation giving the learners not only the skills of 'self-learning' but also the means and methods of critically reflecting on the worth of everything available and acting upon the institutions of the society for its better.

What we need to-day is, to use the term of Paulo Friere, to 'Conscientize' our students in respect of

their existence (needs, problems) etc.), their objectives etc. and to 'channelise' their 'critical transitive consciousness' (which Paulo Friere calls conscientization) along democratic ways of achieving the ever growing objectives (concretization in reality). It is only in dialogues that people learn to verbalize their needs, to become conscious of the problems of mutual value and to learn to reflect. Reflection is essentially a relationship of cause and effect, and it enables one to transcend constraints like the 'to-day' (temporal), 'this place' (spatial) and the 'mine' (the egoistic) without losing either the present or the past but very much acting upon them and becoming aware of facts of the 'to-morrow' (temporal), the 'far-off' (spatial) and the basic humanity (the socialistic). So reflective or problem-posing dialogue is the means to awaken and develop the critical transitive consciousness in our students (the citizens of tomorrow), without which their participation in learning and national development, in spite of their participation in activities of the NSS, NCC, Adult Education programmes will cease to have any long-lasting value or to act as a leverage for sustained socio-economic transformation of our nation.

If our Universities should tune their activities in order to 'conscientize' our students in relation to their needs, and the expectations of the 'wider' environment in which they grow, develop, and act upon, the teacher should be versatile in the ways of involving them in problem-solving dialogic encounters. This means that we should train our University teachers in the principles of learning-teaching, and methods of developing a 'critical' transitive creative citizen out of an acritical intransitive adaptive individual. We would do well to accept the importance of formal training in 'Learning and Teaching' for all the members of staff in the University departments. A number of in-service programmes in 'learning-teaching' for the teachers in Universities appears necessary. This necessity will be acutely felt as more and more first-generation learners from rural centres, backward communities and tribes enter our Universities for higher education.

A few Universities have become aware of these problems, and have started running courses in learning-teaching; but there has not been a concerted effort to develop the required insights, forms and approaches to fulfil this need properly. The existing teacher institutions and educational departments are more concerned with training high school teachers, etc. and are manned by mostly people who may have little experience of teaching in the colleges and Universities, in the sense that their teaching is restricted to graduate trainees. Every University department should utilise the services of the education department, and develop suitable ways and methods of helping the students learn not only their 'subjects' but their socio-economic relevance in life in general, in the 'interests' of the nation in particular, the required new 'value-system', and the necessary skills and abilities for democratic participation for sustained national development. Let us make our university teachers become more enlightened teachers, and towards this end, let us explore for the ways and means. □

Strengthening of agricultural research programmes

We must always remember that agriculture is the mainstay of our national economy on which depends the well-being of the people. It is still the largest industry in India and contributes 50 per cent to the G. N. P. Therefore, it is imperative that all our thinking and planning for the new schemes and projects must keep in sight the needs of agriculture and of the 3/4th of our population who live in the rural areas.

To diversify the cereal based economy it would be necessary to undertake research on systems of farming where cereal farming could be integrated with high value vegetable and fruit crops and livestock production. Small farmers need to be guided on what system of farming they should follow to increase their income and improve their life.

There is need for greater emphasis on problem oriented

the attack of diseases, insect-pest and weeds are tremendous. New control measures and new strategies for pest management are in constant demand.

All efforts need be made for increasing milk production. Milch animals are very costly particularly cross-bred cows. They are also susceptible to diseases. They have to be provided a better health cover. This calls for strengthening of research programmes on disease investigation and control measures. The research on evolving nutrient fodder varieties also needs be stepped up.

The surpluses of cereals, potatoes, vegetables, etc. will demand proper handling so that the farmers get remunerative prices. The enlightened farmers of Punjab are now ready for diversification to horticulture, dairying and poultry in agriculture which will be facilitated by the increasing amo-

Another shift in the future farming would be dairying and the processing of milk. At present about 20 per cent of the cultivated area is under fodders and a 30 per cent increase should be expected in the next few years. This, of course, has to keep pace with the production of hybrid cattle and the improvement of buffalo stocks. When we talk of dairy and poultry farming, it is inherently implied that the oilseed cake, the rice bran and other feeds are utilised within the state rather than exported to other areas of India with added transport costs.

The fate of potato crop this year has already become the cause of concern for us all. Obviously, it is not enough to produce the perishable foods but their well organised handling and marketing is equally important. Therefore, we can see that we cannot talk of diversification of agriculture without looking for outside markets and studying the needs of the people in the deficit areas. We seek guidance from the agricultural scientists as to what should be our outlook on farming in the future.

Where sound advice and correct policy sets the pace of agricultural development, the farmers are ever ready to take initiative and the government too will provide the necessary assistance. I have already geared up the government machinery for implementing the new programme of Integrated Rural Development. Apart from improving the General economic condition of the rural people, it is also intended that the people in the rural areas should get all the necessities and conveniences of modern life as close to their homes as possible. It also aims at providing more employment so that workers don't have to move to cities in search of jobs. If we plan thoughtfully, and work hard we can set an example of stabilization of population which will become a model for the entire world. [Excerpts from the convocation address delivered by Shri Prakash Singh Badal, Chief Minister of Punjab, at the Punjab Agricultural University, Ludhiana.]

CONVOCATION

research. As a result of intensive cropping the basic fertility status of the soil is being exhausted at a much faster rate. The research work on soil fertility problems on crop rotation basis rather than single crop basis needs to be stepped up. A good nitrogen fixation system should also be worked out which will go a long way in increasing the yield of crops, especially that of legume crops. Suitable methods must be found to maintain the productivity of the soil and to reduce the cost of production.

Due to intensive cropping and water use, the diseases and pests are making their appearance. Therefore, in the crop improvement programme, greater emphasis will have to be placed on the evolving of the disease and insect resistant varieties. The losses from

units of rural credit available. Concurrently, market studies will be needed for the sale of perishable foods in the outside markets in the country and abroad. Moreover, production of food crops is going to increase tremendously in other areas of India which have traditionally been experiencing deficits. Since wheat is surplus throughout the world, avenues of its export might remain rather limited. At the same time, there would be greater markets in Middle-East and other deficit areas for quality bread-wheats. Even rice that we produce is not processed properly to suit the needs of the people in the deficit areas. Now our effort should be to produce fine varieties of rice for which there is an almost unlimited market in the Middle-East and in the western countries.

All India Conference of Dravidian Linguists

Delivering the presidential address at the ninth All-India Conference of Dravidian Linguists held recently in Calicut University, Dr. A. Chandrasekhar, Professor of Linguistics at the Delhi University has questioned the Dravidian theory of Indus Valley Civilization propounded by historians. There were historical inconsistencies in the theory that the Dravidians had spread all over India in prehistoric times and had developed a city civilization and a writing system indicating the high order of their culture before the advent of the Aryans. Dr. Chandrasekhar said that with the Dravidian theory as base several scholars had assumed the written records found in the Indus Valley excavations to be in a Dravidian language. The biggest impediment in assuming that the people who had

not adopted. It would be in the interest of the cultivated language to make a survey, collection analysis and study of the uncultivated languages. He suggested that Dravidian studies could be introduced at the degree level in the universities in lieu of a language subject.

Dr. P. C. Chunder, Union Education Minister in his message said that the different families of languages had contributed in the linguistic and literary development and had made India one linguistic area. He hoped that the conference would play a vital role in bringing about unity between languages and people.

Earlier Prof. N. Purushothaman, Acting Vice-Chancellor of Calicut University welcomed the delegates. About hundred delegates attended

lists to develop a methodology to utilise soil and water resources in such a manner that need of the present and the future did not come into conflict. The challenge before the country was to bring about continuous improvement in productivity without a substantial rise in the consumption of non-renewable forms of energy.

Shri Govind Narain, State Governor, asked the awardees to augment the task of productivity. He stressed the need for application of management principles in their activities.

Prof N. S. Ramaswamy, Director of the Institute said the union government was actively considering the proposal for setting up an Animal Energy Development Board. The project for preparing a documentation manual on animal and carts was expected to be completed by mid 1980. The Food and Agricultural Organisation had evinced a keen interest in the development of animal energy resources in view of its possible relevance to developing countries. The Institute would introduce national programme for social service workers soon.

CAMPUS NEWS

built up the oldest known civilization of the Indian subcontinent were the ancestors of the present Dravidian speakers of the country was the absence of cultural continuity. The Brahmi script that was developed in North India had a continuous history and such continuity was not found in the Indus Valley script. The Dravidian speakers originally did not constitute a racially homogeneous group and there was no relationship between race and language.

Dr. Javare Gowda, former Vice-Chancellor of Mysore University commended in his inaugural address the use of either Kannada Telugu or Tamil-Malayalam scripts by sister languages. He said powerful languages like Tulu, Kodagu and Gondi would be forgotten if precautionary measures to resuscitate them were

the three-day conference which discussed eighty papers in its four sessions.

Orientation to management education proposed

Dr. M. S. Swaminathan, Union Agriculture Secretary, addressed recently the annual convocation of the Indian Institute of Management, Bangalore. He said there was urgent need for effective management of land, water, air and sunlight resources based on integrated principles of ecology and economics. He stressed the need for giving an orientation to management training and education which would enable the development of a cadre of managers well grounded in the principles of social and scientific synergy. He asked the management special-

Short term courses at IIT Bombay

The Indian Institute of Technology, Bombay, proposes to conduct seventeen industry-oriented short term courses during 1979. The courses will be residential. The following topics have been selected for this purpose: SPSS in Business, Data processing, Corporate Capital Budgeting, Waste Diffusion in Aquatic/Marine Environment, Non-Destructive Testing of Concrete, Workshop on Bearings for Industry, Application of ICs to Industry, Analysis and Synthesis of Mechanism, Industrial Hydraulics and Hydraulic Controls, Analysis and Design of Machine Foundations, Organisation and Management of Health Services in Rural Areas, Switchgear Principles and High Voltage Testing, Computer-Aided Design of R. C. Structures, Instrumental Methods of Analysis, Aerodynamics and its Applications, Workshop on Electron Optical Techniques, Industrial Mineralogy, Computer Program-

ming and System Design for Business Applications and Micro-processors in Industrial Applications.

Manpower planning

While speaking at the concluding session of the summer lecture series organised by the Department of Business Administration in Lucknow University, Shri S. Mitra of Union Carbide said that man-power planning was one of the most important factors of industry and proper recruitment and development of its personnel were the main ingredients on which a manager had to lay stress. The location of an industry should be at such a place where suitable manpower is available.

Dr. L. D. Joshi, Head of the Department of Business Administration at the University said the lectures were organised mainly for the benefit of MBA students so that they could keep in touch with the practising managers. The students were exposed to the practical aspects of business environment in the country. Eminent persons from industry spoke on different disciplines of management in the six day lecture series.

Facilities for girls' education

The three-day National Conference on Women and Development held recently in New Delhi has recommended that education should be actively-oriented and should be suited to the geographical and environmental needs of the community.

The recommendations were made to the conference by its committee on Education which considered, inter alia, the problem of girl drop outs. The Committee felt that schooling facilities should be increased in those areas where schools were at present at a distance of more than three kilometers to retain girls in schools. It was necessary to develop materials suited to the needs of the children.

The Committee suggested that literacy should be functional for women so that it can bring them money and the education pro-

gramme should be linked with village industries.

The Vice-president, Shri B. D. Jatti who delivered the valedictory address said that constitutional guarantees and legal rights for women should become a reality. It was necessary to secure for every child the education that the Government is committed to give. Shri Jatti said special attention should be paid to the needs of women in the rural and backward areas so that they could make use of the health services already available. Any strategy for women's development will also have to pay a special attention to increase participation by women in economic activity. The Vice President hoped that the conference will be able to generate a force which will secure for every woman justice in social, economic and political spheres on equal footing with men.

Scientific development for masses

Inaugurating the Acharya Jagadish Chandra Bose Centenary Laboratory building in Calcutta recently Prime Minister, Shri Morarji Desai said that scientific and technological development in the country would be meaningless unless the benefits of innovations reached the weaker sections of society. Efforts should be made to provide at least the basic needs to the teeming millions living in the villages. The Prime Minister advised scientists to devote their efforts to the welfare of the rural masses simultaneous with the development of basic sciences. The scientists should evolve practices which would provide a low cost, low energy consuming and pollution free economic system. Efforts should be made to make better use of solar energy, water and land resources and to utilise gainfully the vast human resources available in the country.

Dr. P.C. Chunder, Union Education Minister called upon the scientists in the country to imbibe in them the spirit of dedication of Acharya J. C. Bose. He said that provision of physical facilities would not deliver the goods unless there was sincerity and devotion.

Chief Minister, Shri Jyoti Basu urged the teachers, research workers and staff of the Institute to work in close coordination to bring about overall improvement.

Dr. Atma Ram, Chairman of the National Committee on Science and Technology said the organisational phase of science has now given place to the next phase of assessing benefits from science. He suggested that the Institute should also take up research work in genetic engineering which offered thrilling opportunities for the future.

Research on ecology of birds

Delivering the presidential address at the All-India Summer Institute on Economic Ornithology at the Agricultural College in Hyderabad, Dr. J. Raghotham Reddy, Vice-Chancellor of Andhra Pradesh Agricultural University made an appeal for affection towards birds and development of an effective system of control methods without disturbing the ecology. There should not be undue cruelty to birds although they created inconvenient situations to the farmers and their operations. Dr. Reddy called for maintaining an agro-ecological balance while trying to control the birds which posed certain problems for the farmer.

Dr. G. Rangaswami, Director of the National Academy for Agricultural Research Management in his inaugural address stressed the need to conduct qualitative and quantitative studies to determine the birdpest damages caused to the various crops. There was need to learn more about the ecology of birds vis-a-vis the inter relationship between the bird species host preferences and their seasonal movements to estimate the losses. Dr. Rangaswami called upon the participants to learn bird management techniques and their control methods which should not interfere with the environmental biological system.

Dr. Mir Hamid Ali, Director of the Summer Institute outlined the ornithological studies undertaken in the country. The photo-

graphic technology has helped in making penetrating observations on habits and biology of various bird species. He said that various studies in taxonomy and morphology of the birds have been made by the Zoological Survey of India, Bombay Natural History Society and at the Calicut and Baroda Universities.

ICSSR research programmes

The Indian Council of Social Science Research which has been conducting a number of research methodology courses will add eight new courses during the current year. The annual report for the year 1978-79 of the Council has recorded that seventy-seven projects were sanctioned during the year and one hundred ten fellowships at national and post-doctoral levels were awarded. The Council continues to cooperate with other countries in cultural exchange programmes. It had provided financial assistance to twenty-two Indian social scientists to visit other countries and to seven foreign scientists for visiting India.

Research centre on sources of energy

A research and development centre for evolving relevant technologies for effective utilisation of renewable sources of energy as well as for efficient use of conventional sources of energy has been set up by Jyoti Limited in a village in Baroda. The centre with a team of forty scientists, engineers and economists will make an effort towards the application of solar energy, wind energy and bio-gas plants. The centre has specially designed laboratories, technical library with micro-processor unit and a solar pond. The complex will have sufficient capacity to meet the requirements of the village. The complex was inaugurated recently by Shri H.M. Patel, Union Home Minister.

Study of Sanskrit

The third Tamil Nadu State Sanskrit Conference held recently in Madurai has urged the State

Government to include sanskrit in the school curriculum. The study of sanskrit at higher level could not be meaningful unless the students were equipped with a good foundation, background and knowledge. The conference resolved to request the Institutions devoted to the study of sanskrit to publish important classics with translation in regional languages for the benefit of the common man.

Students scholarships for weaker sections

The Union Ministry of Steel and Mines has introduced a scheme for award of scholarships to deserving students belonging to the weaker sections to pursue their studies in geology at B.Sc. and M.Sc. levels. The scheme provides for scholarships of the value of Rs 250/- each per month at the B.Sc. level and Rs 300/- per month at M.Sc. level. The candidates on successful completion of their studies are expected to be absorbed against various reserved vacancies in the cadres of Geological Survey of India.

HAU research programme on child welfare

The Department of Child Development of the College of Home Science of Haryana Agricultural University will conduct a special research programme on welfare of children to celebrate the International Year of the Child. The projects will include a survey on existing conditions of child labour in the district and preliminary health surveys to find out the utilization of existing child health services in the state. A summer school will be organised on child nutrition and studies of the food consumption pattern of pre-school children in the different soil zones of Haryana will also be conducted by the Department. Dr. P. S. Lamba, Vice-Chancellor of the University said that a child welfare committee and child welfare funds were being constituted in the university to benefit the average child and for the children living in villages.

Promotion of sports

The Union Ministry of Education has liberalised the financial provisions, incentives and its assistance to the State Governments and Union Territories for development of sports and physical education. Financial assistance to state governments for purchase of sports equipment, construction of stadia, swimming pools in hilly areas and amount of honorarium paid to teachers in the rural sports centres have also been raised.

Centralised evaluation in UP Varsities

Shri Shivanand Nautiyal Uttar Pradesh Minister for Higher Education said recently in Lucknow that the Government had decided to regularize the academic session of all the state universities. Examinations in these universities will be completed during September-October and the results would be compiled through central evaluation so that the new session could be started without much loss of time. The Minister said that where courses had not been completed, assistance would be sought from teachers who would be suitably compensated for the extra work put in during vacation.

Winter school on crystallographic computing

The Indian Institute of Science, Bangalore in association with the Commission on Crystallographic Computing of the International Union of Crystallography will organise the winter school on crystallographic computing during January 1980. The tentative list of topics to be discussed include patterson methods, direct methods, refinements, fast fourier transforms, thermal vibrations, electron density measurements, microdensitometry, computer graphics, mini computers, molecular confirmation, macromolecular and programme packages. The lectures which were presented at the school will be published. The details of the programme can be obtained from Dr. K. Venkatesan of the Department of Organic Chemistry of the Institute in Bangalore-560012.

World Sanskrit conference

The fourth World Sanskrit Conference was held recently at Weimar in East Germany to analyse how far the study of Sanskrit and its literature can be significant to scientific disciplines. The themes discussed at the conference included social development in pre-capitalist India, the role played by Sanskrit in India's past and present and position of the language and its culture in world history. An exhibition on Indian culture was also organised on the occasion.

The newly elected President of the Association, Prof. R. N. Dandekar said at the concluding session that Weimar conference had opened new vistas and given fresh impetus to Sanskrit studies. It was announced that fifth world conference will be held in New-Delhi in 1982.

About 180 lectures were delivered and discussed at the plenary and section meetings. The conference was organised by the International Association of Sanskrit Studies and its participants included representatives from India, the Soviet Union, the U.S.A, East Germany, France, West Germany, Italy and Japan.

ICAR research centres in Andaman island

The Indian Council of Agricultural Research has set up a Central Agricultural Research Institute to provide a sound research base to the various farming systems in the Andaman and Nicobar islands and to exploit its vast production potential. The Council proposes to establish in the island a Germ Plasma bank for coconuts and two other research centres for work on tropical crops and livestock. The agricultural scientists feel that the group of over 500 islands in the Bay of Bengal have agro-climatic conditions ideal for crop spices, horticulture and dairying. The sea water around the islands abound in fish and other marine wealth. It is thought that the region is a 'veritable goldmine' for agriculture scientists. The islands could be converted into a major supplier of

spices, fruits, dairy products and fish to the mainland, if developed properly.

Observance of sports year suggested

Addressing the concluding session of the sports seminar on the national policy on sports organised recently in Jabalpur, Shri Dhanna Singh Gulshan, Union Minister of State for Education and Social Welfare suggested that 1980 be observed as sports year throughout the country. The observance of the sports year would boost the morale of sportsmen and help them to render better performances during the 1982 Asian Games to be held in India. The Minister said that there was enough talent in the country and if the sportsmen were provided proper training and were picked up at the right time they could become the world class sportsmen. He said that the Education Ministry had given guidelines to sports bodies in the country to improve the standards of sports.

Delhi Varsity plan for NCC

Delhi University has formulated a plan of action to encourage students to participate in National Cadet Corps activities during the next academic session. A recent meeting of the university authorities held under the chairmanship of the Dean of Colleges considered the question of falling enrolment in the NCC. The university has at present seven thousand cadets in fifty-three colleges affiliated to the university. The Navy and Air-Force wings of the NCC have gained popularity as against the falling enrolment in the Army wing. The university will institute trophies and prizes for winners of inter-university competitions in rifle training, archery, aeromodelling and other subjects of interest. Seminar will be organised on military history and war operations among other things. Practice facilities for shooting and archery will be provided at the clubs which could be used by NCC cadets in spare time as well.

IIS course on application of solar energy

The Indian Institute of Science, Bangalore, organised recently a three-week summer course on the application of solar energy for the benefit of scientific and academic institutions all over the country. The participants were exposed to various research and development programmes being conducted at different centres particularly in the field of solar radiation instrumentation, solar collectors and concentrators, storage and other devices for the utilisation and application of solar energy and other sources of renewable energy such as wind, biogas and hydrogen. The exhibition organised as an adjunct to the course displayed various devices and equipment that are being used in solar energy programmes.

Kurukshetra plans youth camps

The Youth Welfare Department of Kurukshetra University has finalised a programme for organising trekking and youth camps during the summer vacations. A trekking party of a group of thirty boys will leave for Pindari in the Nainital region on a twelve-day programme. The youth leadership training camps will be organised for boys and girls at the Mountaineering Institute, Manali. Another batch of forty students will participate in an advanced youth leadership training camp at Dalhousie.

NCST suggestions on rural development

The interim report of the technical sub-group on rural development of the National Committee on Science and Technology has suggested that rural development programme should be geared up to generate employment and to ensure the satisfaction of basic needs of nutrition, health and education to all classes of society. Generation of employment on a massive scale would depend on the transformation of agricultural sector through transfer and diffusion of new technology. Adoption of differ-

ent cropping practices, proper management and development of water resources, labour intensive farm practices and increase in the intensity of labour absorption per acre of land would also help in finding the increased avenues of employment. Mass literacy, primary education, adult education and the dissemination of skills particularly for the socially handicapped people should be given high priority. The institutional approach should be replaced by a closer relationship between education and work. The Panel has suggested that there is need to pay attention in raising the education level of women to pave way for social reconstruction.

Bihar seminar on modernisation in politics

Presiding over the inaugural session of the seminar on Problems of Modernisation in Bihar Politics conducted recently by the Department of Political Science of Bihar University, Dr. Shakeelur Rahman, Vice-Chancellor said that politics without political consciousness was dangerous. He said that nation's interests and traditions must be given top priority in every kind of politics. We could not get a real political assessment without knowing psychology of the people and the process of political developments. Dr. Rahman said that the Department of Political Science should produce real politicians in true sense of the term.

Prof. R.C. Prasad, Head of the Political Science Department in Magadh University explained the concept of modernisation and said that India need not imitate the West in all respects. The country should evolve its own model of development and attempt should be made to avoid wastefulness which was associated with the western style of life.

Dr. U.S. Sadari, Professor of Political Science in Jawaharlal Nehru University outlined the disadvantages and the difficulties inherent in the study of state politics in India. He highlighted the importance of studying class forces operating in politics.

Dr. L. P. Sinha, Head of the

Department of Political Science of the University welcomed the guests and said that the test of political science was its applicability and practicability. We should not forget that the poverty stricken and misery afflicted masses will be the true judge of a theory or an approach adopted by politicians.

The seminar was sponsored by the University Grants Commission and its participants included faculty members from the various universities in the country.

Summer institute for college librarians

A Summer Institute for college librarians was organised recently by the University of Kerala. Dr. V.K. Sukumaran Nayar, Vice-Chancellor of the University inaugurating the Summer Institute said that library facilities in colleges situated in areas outside city limits were not being utilised properly by students. The college students in these areas were eager to get back to their residences after college hours and did not avail of the benefits of the libraries. Commenting on the role of librarians, the Vice-Chancellor said that they had a new role to play in society in view of the changed concept of a Library. Dr. Nayar said that all major universities in the world had good libraries and some

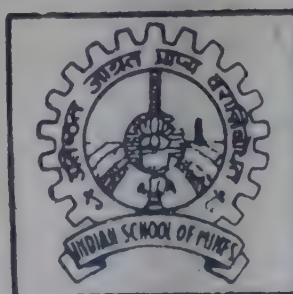
universities are known for their well stocked libraries.

The Institute was sponsored by the University Grants Commission. College librarians from the Universities of Kerala, Calicut and Madurai Kamaraj participated in the twenty-one day Summer Institute.

Kurukshetra Varsity organises Institute in linguistics

Dr. Vikas Mishra, Vice-Chancellor, Kurukshetra University delivered the valedictory address at the concluding session of the All-India Institute in Linguistics for college teachers organised recently by the Department of Linguistics of the University. He emphasised the significance of language for the intellectual growth of a society and said command over language was a precondition to any reasoned formulation.

The three week Institute was sponsored by the University Grants Commission and the participants included faculty members and representatives from the universities/colleges in the states of Jammu and Kashmir, Punjab, Haryana, Delhi, Uttar Pradesh, Madhya Pradesh, Rajasthan and Gujarat. It was the first All India Institute in linguistics held in this part of the country.



**Indian
school of
Mines**

DHANBAD-826004

No. 615002/79

May 22, 1979

CORRIGENDUM

In the Admission Notice issued on January 29, 1979 it may be noted that—

- (i) In admission to first year of the 5-year (10 Semester) programmes, the number of seats in B Tech (Mining Machinery) is raised from 10 to 20.
- (ii) There may not be any admission to first year of 5-year M.Sc. programmes in Applied Geology and Applied Geophysics disciplines.

**S. P. VARMA
REGISTRAR**

Book exhibition

Inaugurating the book exhibition organised by the Mysore University in Bangalore recently, Shri B. Subbayya, Shetty, State Education Minister said that the state universities should constitute a coordination committee to avoid duplication in printing of books. The universities should assess the demand of books before printing to prevent excessive publication. It would be useful if educational institutions could decide on the relevance of various books to the society to give them suitable priority in the publication programmes.

Dr. Prabhu Shankar, Director, Mysore University Prasanga welcomed the gathering and requested the government to set up networks for distribution of books to rural libraries.

About 1, 200 books in English and Kannada were displayed at the exhibition.

Akhil Bharat Nai Talim Sammelan

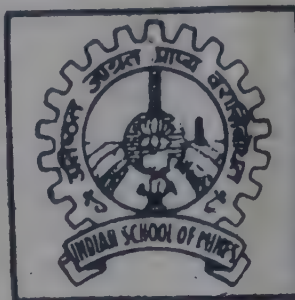
Prime Minister, Shri Morarji Desai inaugurated recently the Akhil Bharat Nai Talim Sammelan convened in Calcutta to discuss the Draft National Policy on Education. The Sammelan was of the consensus that some important points of the draft policy needed to be re-cast to serve the eighty per cent of the population who were untouched by the existing system of education. The task of education should be to develop a system responsive to the need of individual and society with particular emphasis on bringing all the under-privileged people within its purview. An integrated approach for development of body, mind and soul and teachers' participation in the process of evolving egalitarian society wedded to self-reliance and dignity of labour was favoured. It was felt that the task of recasting the content and reorienting the system should be adopted with a clear objective enunciated by Gandhiji. The Sammelan was of the view that the draft policy with particular reference to preamble, aim and content system needed to be specific and unambiguous to reflect the

ideas of the large section of our people who had required fundamental changes in the existing system. It was further suggested that educational institutions and educational decisions should be kept free from interference so that education became the real national endeavour leading to national education.

Dr. P. C. Chunder, Union Education Minister, representatives of the Planning Commission, National Council of Educational Research & Training and others participated in the Sammelan.

Scholarships for study in Arab Republic of Egypt

The Union Ministry of Education and Social Welfare have invited applications for award of scholarships offered by the Government of Arab Republic of Egypt for postgraduate/post-doctoral studies or research in the field of archaeology, museology, Arabic language and history. Candidates holding master's degree with a uniformly good academic record are eligible for these awards. The Department of Education of the



Indian school of Mines

DHANBAD-826004

No. 615028/79

May 29, 1979

**Direct Admission-1979
For Rank-Holders Etc.**

A limited number of seats in the first year of the 5-year Integrated Programme leading to the degrees of B Tech in (1) Mining Engineering, (2) Petroleum Engineering, (3) Mining Machinery and of Master of Science in (1) Applied Geology and Applied Geophysics at the Indian School of Mines, for the session 1979-80, are reserved for rank-holders in the examinations for Pre-University/Indian School Certificate/Higher Secondary (or equivalent) with Chemistry, Mathematics, Physics and English conducted by recognised Universities/Boards and results announced in the month of August 1978 or afterwards,

2. Candidates who have secured at least 60 percent marks in each of the subjects of Physics, Chemistry and Mathematics and are within the first ten ranks in the examination mentioned above, are eligible to apply for admission under this category. However Scheduled Caste/Scheduled Tribe candidates who have obtained not less than 50 percent marks (in aggregate) in Physics, Chemistry and Mathematics, may also apply for admission.

Candidates who have already appeared for the ISM Entrance Examination conducted this year may also apply for seats under this category provided they satisfy the conditions mentioned above.

3. Only such candidates as were born on or after 1st October, 1958 are eligible for admission under this category. The upper age limit is relaxable by three years in the case of candidates belonging to Scheduled Caste and Scheduled Tribes.

4. Detailed instructions and Application Form can be had from the Registrar, Indian School of Mines, Dhanbad-826004, by sending a Crossed Postal Order for Rs. 5/- only.

Applications in the prescribed form, complete in all respects including rank-holder certificate and marks-sheet, should reach the Registrar, Indian School of Mines, Dhanbad by 30th June, 1979.

**S. P. VARMA
REGISTRAR**

Ministry in Shastri Bhawan, New-Delhi-110001 will entertain the completed applications on prescribed forms upto 30th June, 1979.

Reservation for rural candidates

The Maharshi Dayanand University, Rohtak has announced recently that 25 out of 115 seats for the next MBBS course at the university will be reserved for candidates from rural areas. The university also reserves seats for candidates belonging to scheduled castes/backward classes and children of deceased military personnel. The Registrar of the University said that students who had studied from primary to higher secondary stage in village schools which were outside the jurisdiction of any Municipality, Notified Area Committee or town Committee would be treated as candidates belonging to rural areas.

Centre for atmospheric sciences at IIT Delhi

The Indian Institute of Technology, Delhi, has set up a centre for Atmospheric Sciences under the Sixth Five-year Plan programmes. The Centre will take up the activities relating to application of Fluid Dynamics in areas of practical interest with special emphasis on atmospheric sciences. Projects of an inter-disciplinary and inter-institutional research have already been developed by the Centre. A scientific programme will be developed in collaboration with French and British Universities to support some of the research projects.

ICAR award for rural artisans

The Indian Council of Agricultural Research has instituted awards to be made for innovative contributions and indigenous technology developed or transferred by the farmers or rural artisans in the field of agriculture, animal husbandry and allied spheres. The award will be given to two farmers/artisans from each of the eight agroclimatic regions of the country.

Revised courses for Delhi Varsity

The Academic Council of Delhi University has approved four revised courses in engineering, vocational studies, home science and chemistry. The engineering course has been revised to be at par with the IIT standards. The Chemistry pass course would continue to offer two papers instead of three as suggested by the department. It was also suggested that specialisation should be introduced at the pass course in the chemistry department.

A diploma course in journalism would also be started from next year. A committee has been set up to recommend various steps needed to start the course.

Madras Varsity to suspend admission to PG courses

The Madras University has decided to suspend admissions in the first year of the MA, MSc and MCom courses conducted in its departments as a temporary measure during the current academic session. This is being done in order to concentrate and help in organising the MPhil courses for a large number of candidates in the various faculties of the university. Dr. G.R. Damodaran, Vice-Chancellor of the university said that the temporary suspension of admission for this year would be in the disciplines and courses that were already available in a large number of postgraduate colleges where, if necessary, a few additional seats could be sanctioned. The special subjects and specialisations under postgraduate courses for which there were no facilities in any of the postgraduate courses would be continued at the university. For this purpose the university was consulting its departments and the postgraduate colleges so as to finalise the list of courses to be suspended and to be continued. Surplus teachers, due to the shedding of the pre-university course by colleges, would be accommodated in the MPhil courses.

Sociology in BEd course

Teaching of Sociology at BEd level will be introduced in teacher-

training colleges for the first time to facilitate training of Sociology teachers for the schools.

The new syllabus has been finalised by a team of more than fifty experts drawn from Jawaharlal Nehru University, Banaras Hindu University, Calcutta University, the National Council of Educational Research & Training (NCERT) and the faculty of various teacher-training colleges.

Twelfth Commonwealth Universities Congress

The report about Proceedings of the Twelfth Commonwealth Universities Congress held at Vancouver, Canada, from 21st to 25th of August 1978 has now been printed by the Association of Commonwealth Universities under the title *Pressures and Priorities*. The 659-page volume costs £10 and is available from the office of the Association of Commonwealth Universities, 36 Gordon Square, London, England WC1H 0PF.

The Twelfth Quinquennial Congress was attended by "444 delegates and observers nominated by 186 member-universities together with 123 representatives of other organisations and specially invited guests".

The Congress had five topics for Group Discussions. These were:

Topic 1: The World Food Problem and the Universities

Topic 2: Higher Education in Countries with Federal Systems of Government

Topic 3: Reconciling Equality and Excellence

Topic 4: The Public View of the Universities

Topic 5: Universities and Other Institution of Tertiary Education

The report covers the discussions in the various Sub-topics and Topics for the Group Discussions and reports of Plenary Sessions. Besides, the Quinquennial Report of the ACU Secretary-General covering the period 1973 to 1978, "A Statistical Portrait of Canadian Higher Education" also appear in the appendix.

A list of Doctoral Theses Accepted by Indian Universities

PHYSICAL SCIENCES

Mathematics

1. Bansi Lal. Solutions of some two-dimensional boundary value problems by integral equation techniques. University of Delhi.
2. Mittal, Bhim Sen. Studies in scheduling and programming problems. University of Delhi.
3. Pramodini Devi. Flow analysis of non-Newtonian liquids. Utkal University.
4. Prasad, P. Krishna. Action of discontinuous groups on the upper half-plane. Sardar Patel University.

Statistics

1. Pal, Satyabrata. Some problems of factorial experiments. University of Calcutta.

Physics

1. Adhikari, Debabrata. Studies on some aspects of the hydrodynamics equations and the transport coefficients of gaseous plasmas. University of Calcutta.
2. Awasthi, R. K. Vibrational studies of solids. Kanpur University.
3. Bhanja, Sisir. Effects of a magnetic field on the heat conductivity of gases. University of Calcutta.
4. Deshmukh, Pranawachandra Chakradhar. Some considerations in atomic and solid state physics with special reference to X-ray spectra. Nagpur University.
5. Pal, Sankar Kumar. Studies on the application of fuzzy set theoretic approach in some problems of pattern recognition and man machine communication by voice. University of Calcutta.
6. Ray, Sudiptanarayan. Measurement of the differential incoherent scattering cross sections of gamma radiation at different energies. University of Calcutta.
7. Singhal, K. C. Evaluation and improvement of atomic absorption spectrophotometric technique, and its analytical application. Indian School of Mines, Dhanbad.
8. Vallamattom, Annie Joseph. Studies in molecular spectroscopy. University of Cochin.

Chemistry

1. Alok Kumar. Studies on synthetic drugs. Kanpur University.
2. Anand, Baldev Kumar. Studies in the kinetics of degradation of some antibiotics. Jiwaji University.
3. Balaram, Vysetti. Studies on the solvent extraction of molybdenum (VI) in the presence of some anions and neutral donors. Andhra University.
4. Basu, Swati. Non-ideality in vinyl polymerisation. University of Delhi.
5. Bhardwaj, Somdev. Cation-exchange equilibrium studies of some lanthanides in aqueous and mixed solvents. Jiwaji University.
6. Bhattacharyya, Parthasarathi. Studies on vulcanization of natural rubber. University of Calcutta.
7. Chauhan, Suman. Kinetics and mechanism of reactions of some plasticizers: Hydrolysis of 2-butoxy ethyl orthophosphates. Jiwaji University.

8. Ghosh, Arundhati. Chemistry of plant products. University of Calcutta.

9. Gupta, Rama. Synthetic and electrometric studies on heterocyclic compounds. University of Roorkee.

10. Mehta, Yogesh Kumar. Chemistry of sesquiterpenoids. Punjab Agricultural University.

11. Mukhopadhyay, Kanchan Kumar. Synthetic studies in heterocyclic systems. University of Calcutta.

12. Nagar, Ashish. Synthetic and natural studies of some plant polyphenolics. University of Delhi.

13. Saha, Nareschandra. Studies on some aspects of the radiolysis of iminodiacetic acid and its metal complexes in aqueous solutions. University of Calcutta.

14. Shah, Kashmira Kumudchandra. Synthetic studies in oxygen containing heterocycles (1-H-2-benzopyran-1-ones) Sardar Patel University.

15. Shyal, R. K. Mechanism of the effect of substituents and configuration on the oxidation of organic compounds. Kanpur University.

16. Siddiqui, Amina. Polarography of some potential drugs and biological stains. University of Delhi.

17. Singh, Ashok Kumar. Studies on some metal complexes of sulphur and nitrogen containing ligands. University of Roorkee.

18. Subrahmanyam, Kuchibhotla. Chemical examination of the wood extractives of some medicinal plants and piper aurantiacum wall. Andhra University.

19. Suryaprakasa Raju, Gadiraju. Some studies on dicarboxylate complexes and analytical chemistry of thallium. Andhra University.

20. Thakur, Gulab Singh Jagannath Singh. Studies on the complexes of some less common elements. Nagpur University.

21. Tripathi, V. K. Additions to acetylenic ketones. Kanpur University.

22. Vajpai, A. C. Studies on iron doping in some metal oxide systems. University of Roorkee.

23. Vijaya Lakshmi. Kinetics of oxidation of organic compounds by acid bromate. Kakatiya University.

24. Vyas, Pramod Kumar. Chemical investigation of some Indian medicinal plants. University of Indore.

Earth Sciences

1. Rammohan, Hebbar Subbaramaiah. A study on the water balance and drought, climatology of Tamil Nadu. Andhra University.

2. Sarma, Kali Prasad. Petrological and structural study of the pre-cambrian rocks of botlaguduru Area. Kanigiri Taluk, Prakasam District, Andhra Pradesh. Gauhati University.

3. Subrahmanya Sastri Sita Rama Anjaneya. Studies on some agroclimatic aspects of Andhra Pradesh. Andhra University.

Engineering & Technology

1. Agarwal, R. D. Study in production of alloy powders by cementation. University of Roorkee.

2. Awadhanlu, T. V. Evaluation and optimization of steady state performance of an inverter fed induction motor drive system. University of Roorkee.

3. Gulam Murtaza. Time dependent behaviour of single piles under lateral loads in cohesive soil. University of Roorkee.

4. Gupta, M. K. Liquefaction of sand during earthquakes. University of Roorkee.

5. Kohli, N. P. Optimal power systems operation using mathematical programming: University of Roorkee.

6. Puri, Narendra. Probabilistic study of time dependent properties of plain and fly ash concrete. University of Roorkee.

7. Qamaruddin, M. Development of brick building systems for improved earthquake performance. University of Roorkee.

8. Shiva Ram, B. A study of compaction and engineering behaviour of soil due to foam propellant. University of Roorkee.

BIOLOGICAL SCIENCES

Anthropology

1. Raychauduri, Samirkumar. Physical anthropology of the males of Nadia District. University of Calcutta.

Marine Biology

1. Kuttyamma, V. J. Studies on the common penacid prawns of the Kerala Coast. University of Cochin.

Botany

1. Baruah, Kushal Kumar. Studies on the physiology of chlorosis in paddy, *oryza sativa* L. Punjab Agricultural University.

2. Kothekar, Vijay Shridhar. Motational studies in *solanum nigrum* L. Nagpur University.

3. Lal, Shridhar. Studies on genetic variability, heterosis and combining ability in strawberry, *Fragaria ananassa* Duch. Kanpur University.

4. Malhotra, Kusum. Transgenesis in higher plant cells: A reappraisal. University of Delhi.

5. Mehta, Moti Keki. Investigation of certain metabolic products of some common green algae. Nagpur University.

6. Mishra, Jayandra Kumar. Biochemical studies on some *Botryodiplodia* rots with special reference to cell wall degrading enzymes. University of Saugar.

7. Rao, G.S.C. Studies of manganese nutrition of sugarcane plant. Kanpur University.

8. Srivastava, V.K. In vitro studies on the allelopathic effects in the dynamics of establishment of natural plant communities of Rajkot. Saurashtra University.

9. Sur, Banani. Keratinophilic fungi of Orissa. Utkal University.

10. Varko, Mary. Experimental studies on effects of plant growth regulators on vegetative morphology and floral morphogenesis in *Ricinus communis*-Linn. Kanpur University.

Zoology

1. Goswami, Umesh Chandra. Vitamin A in fresh water fish. Gauhati University.

2. Hanumanthaiya, V. Survey of free-living amoebae of soil fresh water, sewage sludge and other substrates and their pathogenicity to laboratory animals. Kanpur University.

3. Madhusudhan Rao, G. Metabolic studies on functionally different muscles of a fresh water field crab, *Papatelphusa hydromedusa* (Herbst) and a fresh water mussel, *Lamellidens corrianus* (Lea). Kakatiya University.

4. Ramulu, G. Raghu. Studies on the nervous system of some platyhelminthes. Kakatiya University.

5. Saratchandrd, Beera. Studies on protozoan parasites of reptiles of Andhra Pradesh. Andhra University.

6. Srinivasa Rao, Duggaraju. Systematics and ecology of intertidal annelidan polychaetes in vasish-to-Godavari Estuary. Andhra University.

7. Thakre, Vasant Yadavrao. Study on the biology of *rasbora daniconius* (Hamilton—Buchanan). Marathwada University.

Medical Sciences

1. Bandyopadhyay, Arati. Dermatoglyphics in relation to epilepsy. University of Calcutta.

2. Gangopadhyay, Chameli. Mucopolysaccharides, water and electrolytes of human fetal organs. University of Calcutta.

Agriculture

1. Anand Mohan. Biometeorological and biochemical studies in peppermint plant, *Mentha piperita* L. Kanpur University.

2. Ayodhya Prasad. Impact of modern technology on production pattern and resource use productivity of small farms in Chaka Block of Allahabad District. Kanpur University.

3. Bagga, Rajendra Kumar. Studies on the effect of dates of nursery seeding, age of seedlings and nitrogen levels on hybrid bajra under late sown conditions. Haryana Agricultural University.

4. Chaturvedi, O.P. Studies on nutritional requirement of gladiolus. Kanpur University.

5. Daljit Kaur. Content analysis and listeners' reactions towards womens' programme broadcast from All India Radio, Jullundur. Punjab Agricultural University.

6. Jiwan Lal. Comparative studies on the bioefficacy of ULV sprays for the control of jassids on cotton. Punjab Agricultural University.

7. Nathu Singh. Study of rationality of credit patterns and adoption of new cropping pattern in small farmers Development Agency, District Fatehpur of U.P. Kanpur University.

8. Ray, Sajal Sankar. Studies on chemical control of growth and flowering of mango, *Mangifera Indica* L. University of Calcutta.

9. Trivedi, Raj Kumar. Studies on the genetic parameters of yield and its components in jack fruit. *Artocarpus heterophyllus* Lam. Kanpur University.

10. Vajpayi, Arvind Kumar. Studies on the inheritance of genetic variability, heterosis and combining ability in sunflower, *Helianthus annuus*. Kanpur University.

11. Verma, Ram Babu. Studies on salt tolerance in mango *Mangifera indica*. Kanpur University.

Veterinary Science

1. Joshi, Vasant Gopal. Studies of thyroid function in different strains of fowl in relation to growth rate and laying performance. Konkan Krishi Vidyapeeth.

2. Radadia, Nagji Shamjibhai. Effect of differential body cooling during summer on milk production and some physiological aspects of female Murrah buffaloes. Haryana Agricultural University.

3. Singh, Chandrodya. Manufacturing methods and storage properties of ghee. Kanpur University.

4. Uppal, Raj Paul. Neurologic effects of insecticides and their interaction with drugs. Haryana Agricultural University.

Additions to AIU Library

- Asian Programme of Educational Innovation for Development, Bangkok. *Co-operation in curriculum explorations: Report of a High-level Personnel Exchange Workshop, Islamabad and Karachi, 1975.* Bangkok, Unesco Regional Office for Education in Asia (c 1976) 56 p.
- Documentation and information support for educational innovation: Report of a Regional Seminar, Bangkok, 1977.* Bangkok, Unesco Regional Office for Education in Asia, 1977, 43p.
- Inter-country co-operation in Educational Technology in Asia: Report.* Bangkok, Unesco Regional Office for Education in Asia, 1977. 58 p.
- National work plans of educational innovation in member states 1978-82.* 3 Pts. Bangkok, Unesco Regional Office for Education in Asia, 1977. Disconted.
- Pt. 1. India, Nepal, Sri Lanka.
- Pt. 2. Indonesia, Korea, Malaysia, Philippines.
- Pt. 3. Thailand.
- Association of Universities and Colleges of Canada, Ottawa. *Proceedings of the annual meeting, Ottawa, 1978.* Ottawa, Author, 1978. 97 p.
- Australian Vice-Chancellors' Committee, Canberra. *Publishing assistance.* Canberra, Author, 1969. 3p.
- Bassett, G.W. and others. *Individual differences: Guidelines for educational practice.* Sydney, Allen and Unwin (c 1978) xi, 284.
- Butts, R. Freeman. *Public education in the United States: From revolution to reform.* New York, Holt, Rinehart and Winston (c 1978) xi, 436 p.
- Callahan, Joseph F. and Clark, Leonard H. *Innovations and issues in education.* New York, Macmillan, 1977. viii, 312 p.
- Carnegie Foundation for the Advancement of teaching. *States and higher education: A proud past and a vital future.* San Francisco, Jossey-Bass, 1976. xvi, 94 p.
- Crick, Bernard and Porter, Alex, ed. *Political education and political literacy: The report and papers of, and the evidence submitted to, the Working Party of the Hansard Society's Programme for Political Education.* London, Longman (c 1978) viii, 264 p.
- Globerson, Arye. *Higher education employment: A case study of Israel.* Hampshire Saxon House (c 1978) xviii, 171 p.
- Goodwin, Barbara. *Social Science and Utopia: Nineteenth-century models of social harmony.* Sussex, Harvester, 1978. ix, 220 p.
- Grace, Gerald. *Teachers, ideology and control: A study in urban education.* London, Routledge & Kegan Paul, 1978. xi, 264 p.
- Illich, Ivan and others. *Disabling professions.* London, Morion Boyars (c 1977) 127 p.
- McIntosh, Naomi E. and others. *Degree of difference: The Open university of the United Kingdom.* New York, Praeger, 1977. xvii, 320 p.
- Newman, Michael. *Poor cousin: A study of adult education.* London, Allen and Unwin, 1979. x, 249 p.
- Palm, Goran. *Flight from work.* Cambridge, Cambridge University Press (c 1974) xxiii, 204 p.
- Paterson, R.W.K. *Values, education and the adult.* London, Routledge and Kegan Paul, 1979. viii, 306 p.
- Regional Consultation Meeting on the Asian Programme of Educational Innovation for Development, 2nd, Tokyo, 1975. *Final Report: Bangkok, Unesco Regional Office for Education in Asia, 1975.* 19 p—xLiii.
- 3rd, Bangkok, 1976. *Final report.* Bangkok, Unesco Regional Office for Education in Asia, 1976. 49 p.
- 4th, Bangkok, 1977. *Evaluative review and recommendations for the second programming cycle: Final report.* Bangkok, Unesco Regional Office for Education in Asia 1977. 134 p.
- 5th, Bangkok, 1978. *Toward implementation of the second-cycle plan: Final report.* Bangkok, Unesco Regional Office for Education in Asia 1978. 134 p.
- Ritterband, Paul. *Education, employment and migration: Israel in comparative perspective.* London, Cambridge University Press (c 1978) xi, 143 p.
- Robinson, H. Alan. *Teaching reading and study strategies: The content areas.* Boston, Allyn and Bacon (c 1975) ix, 277 p.
- Robinson, W.P. *Language management in education.* Sydney, Allen and Unwin, 1978. 188 p.
- Roderick, G.W. and Stephens, M.D. *Education and industry in the nineteenth century: The English disease?* London, Longman (c 1978) viii, 196 p.
- Rusell, James. *Acquisition of Knowledge.* London, Macmillan (c 1978) x, 294 p.
- Schlechty, Public C. *Teaching and social behavior: Towards an organisational theory of instruction.* Boston, Allyn and Bacon (c 1976) xi, 333 p.
- U.S. National Child Labor Committee. *Rite of passage: The crisis of youth's transition from school to work.* New York, Author, 1976. v, 46 p.

CLASSIFIED ADVERTISEMENT

THE UNIVERSITY OF BURDWAN

RAJBATI: BURDWAN WEST BENGAL

Advertisement No. 1/79-80
Dated, 4th June, 1979

Applications in the prescribed form are invited for the following posts in the approved scales of pay (viz. Reader Rs. 1200-50-1300-60-1900/- and Lecturer-Rs. 700-40-1100-50-1600/-) with allowances and other benefits according to University Rules.

- A. Reader in Instrument Science (Electronics)...One post
- B. Lecturer in Instrument Science... One post.

Minimum qualifications

For A: At least Second Class Post-Graduate Degree in Engineering or Science with 5 years' experience in R & D of instruments or in operation, repair and maintenance of modern instruments.

For B: At least Second Class B.E./B. Tech./M.Sc. with 2 years' experience in operation of sophisticated instruments/repair and maintenance of modern instruments.

Desirable: A flair for R & D activity in instruments.

The University Council may on the recommendations of the appropriate Selection Committee, waive any of the requirements in view of the candidate's specialised knowledge in the subject. The choice of the Committee may not necessarily be confined to those who apply formally.

For application form and other information apply to the Registrar with a self-addressed stamped (0' 40 p.) envelope (9"X4").

Last date for submission of applications with requisite fee of Rs. 5/- is June 28, 1979.

A. K. Chaudhuri
REGISTRAR

HARYANA AGRICULTURAL UNIVERSITY

HISSAR

Advertisement No 4/79

Applications invited for following posts. Higher start outstanding qualifications, experience and achievements. Benefits of Contributory Provident Fund and leave etc. according to University Rules. Applications of the candidates already in service must reach through proper channel upto the fixed date. Applications on prescribed form (obtainable free by sending self-addressed unstamped envelope size 23x10 cms. to Assistant Registrar (R), HAU, Hissar) accompanied by prescribed fee of Rs. 10/-, in the form of Crossed Postal Order in the name of Assistant Registrar (R), HAU, Hissar payable at Hissar Post Office should reach Registrar by 2nd July, 1979. The envelope containing application must be superscribed as "APPLICATION FORM FOR THE POST OF——".

1. Director of Research: (One): Basic:

(i) Second class B.Sc. (Agr.), B.Sc. (Animal Science), B.V.Sc. and A.H. or B.Sc. (ii) Second class M.Sc. in any science related to Agriculture, Veterinary Medicine or Animal Science. (iii) Ph.D. in any science related to Agriculture, Veterinary Medicine or Animal Science. Experience: i) Should be an outstanding Scientist of national and international standing, with a distinguished record of research. (ii) Should possess ability to organize, supervise and co-ordinate scientific research, leadership, initiative and ability.

2. Associate Dean, College of Agriculture: (One)

(i) Second class B.Sc. Agri. followed by second class M.Sc. in any field of Agriculture. (ii) Ph.D. in any field of Agriculture. (iii) Ten years experience in teaching/research/extension of which atleast five years should be in Class I. (iv) Leadership qualities and administrative experience and capacity for organisation in a postgraduate teaching or research dept./institution.

3. Biochemist (Mycotoxins): (One)

Essential: (i) Second class B.V.Sc. & A.H./B.Sc. (Ani. Sc.) / B.Sc. (Agri.) / B.Sc. (ii) Second class Master's degree in Biochemistry / Organic Chemistry / Physiological Chemistry. (iii) Ph.D. in Biochemistry / Organic Chemistry / Physiological Chemistry. (iv) Five years experience of research/teaching in the above fields. (v) Experience in isolation and identification/characterization of mycotoxins. Desirable: Training / Experience in modern analytical techniques.

4. Associate Professor of Rural Sociology: (One)

Essential: i) Second class B.Sc.(Agr.) / B.V.Sc. or B.A. ii) Second class M.A. in Sociology or M.Sc. in Rural Sociology. (iii) Ph.D. in Sociology or Rural Sociology. (iv) Five years' experience of teaching/research/extension. Desirable: i) Knowledge of basic statistical

methods. ii) Experience should be preferably in rural sociology.

5. Soil Scientist: (One)

i) Second class B.Sc. (Ag.) ii) Second class M.Sc. (Ag.) in Soil Science. (iii) Ph.D. in Soil Science. (iv) Five years' experience of teaching/research/extension.

6. Entomologist: (One)

i) Second class B.Sc. (Ag.) ii) Second class M.Sc. (Ag.) in Entomology. (iii) Ph.D. in Entomology. (iv) Five years' experience of teaching/research/extension in Entomology/Economic Entomology.

7. Research Officer (Plant Breeding): (One)

i) Second class B.Sc./B.Sc. (Agr.). ii) Second class M.Sc./M.Sc. (Agr.) in Plant Breeding/Genetics. (iii) Ph.D. in Plant Breeding/Genetics. (iv) Five years' experience of research/teaching in Plant Breeding/Genetics with special reference to brassica.

8. Research Officer (Biochemistry): (One)

i) Second Class B.Sc./B.Sc. (Agr.). ii) Second class M.Sc./M.Sc. (Agr.) in Biochemistry / Agril. Chemistry. (iii) Ph.D. in Biochemistry/Agril. Chemistry. (iv) Five years' experience in the quality analysis work on field crops. Desirable: Research experience in the quality aspects on rapeseed and mustard.

9. Research Officer (Plant Protection): (One)

Essential: i) Second class B.Sc./B.Sc. (Agr.). ii) Second class M.Sc./M.Sc. (Agr.) in Plant Pathology/Entomology. (iii) Ph.D. in Plant Pathology/Entomology. (iv) Five years' experience of research/teaching preferably on Plant Protection of Oilseed Crops. Desirable: Research experience of Plant Pathological/Entomological work on rapeseed and mustard.

10. Pedologist: (One)

Essential: i) Second class B.Sc. (Agr.)/B.Sc. followed by second class M.Sc. in Soil Sciences/Agricultural Chemistry. (ii) Ph.D. in Soil Sciences/Agril. Chemistry with specialization in Pedology. (iii) Five years teaching/research/extension experience in Soil Survey and Classification work. Desirable: Training in Aerial Photo Interpretation / Geomorphology/Hydrology/Clay Mineralogy.

11. Associate Professor Animal Production Physiology: (Two)

Essential: i) Second class B.V.Sc./B.Sc. (Animal Sciences)/B.Sc. (Dairying)/B.Sc. (Agr.). ii) Second class M.Sc. in Animal Production Physiology / Animal Physiology / Physiology. (iii) Ph.D. in any branch of Animal Production Physiology/Physiology with specialization in A.P.P. (iv) Five years' experience of teaching/research/extension in any branch of Animal Production Physiology.

12. Associate Professor of Veterinary Public Health (One)

Essential: i) Second class B.V.Sc. &

A.H. ii) Second class M.V.Sc. in Vety. Microbiology with specialization in Public Health. (iii) Ph.D. in Vety. Public Health/Vety Microbiology with specialization in Vety. Public Health. (iv) Five years' experience in teaching/Research/extension in Vety. Public Health. Desirable: Advanced training in Pathology Bacteriology/Parasitology/Public Health.

13. Agronomist (Pulses): (One)

Essential: i) Second class B.Sc. (Agri.). ii) Second class Master's degree in Agronomy. (iii) Ph.D. in Agronomy. (iv) Five years experience in teaching/research/extension, preferably on Pulses. Desirable: Knowledge of modern statistical methods in field experimentation.

14. Associate Professor (Plant Physiology): (One)

i) Second class B.Sc./B.Sc. (Ag.). ii) Second class M.Sc./M.Sc. (Ag.). (iii) Ph.D. with specialization in some aspect of environmental crop physiology. (iv) Five years experience of teaching / research/extension education in the subject.

15. Associate Professor (Plant Breeding): (One)

i) Second class B.Sc. (Agri.)/B.Sc. ii) Second class M.Sc. in Plant Breeding/Genetics. (iii) Ph.D. in Plant Breeding/Genetics. (iv) Five years experience of research/teaching/extension in the discipline of Plant Breeding/Genetics.

16. Assistant Professor of Vegetable Crops: (One)

i) Second class B.Sc. (Agril.). ii) Second class M.Sc. (Agril.) in Vegetable Crops/Horticulture with specialization in Vegetable Crops. (iii) Ph.D. in Vegetable Crops/Horticulture with specialization in Vegetable Crops OR three years experience of teaching/research/extension in Vegetable Crops.

17. Assistant Residue Chemist: (One)

i) Second class B.Sc./B.Sc. (Agri.) ii) Second class M.Sc. in Chemistry Biochemistry. (iii) Ph.D. in Chemistry-Biochemistry OR 3 years experience in residue analysis after Master's degree.

18. Assistant Scientist (Soil Science): (One)

i) Second class B.Sc. (Ag.). ii) Second class M.Sc. (Ag.) in Soil Science. (iii) Ph.D. in Soil Science OR 3 years' experience in Research/Teaching/Extension in the field of Soil Science.

19. District Extension Specialist (Agril. Engineering): (Three)

i) Second class Bachelor's degree in Agri.Engg. with three years experience in Soil & Water Engineering or Farm Machinery and Power or Process Engineering OR Second class Master's degree in Agri. Engg with specialization in Soil & Water Engineering or Farm Machinery and Power or Process Engineering.

20. Assistant Professor (Economics): (One)

Essential: i) Second class B.A./

B.Sc. (Ag.)/B.Sc. with Economics and Mathematics. ii) Second class M.A./M.Sc./M.Sc. (Ag.) with Econometrics or mathematical Economics and three years experience in Economics with a paper on econometrics / mathematical economics OR Ph.D. in Economics with specialisation in econometrics or mathematical Economics. Desirable: Teaching / research experience in econometrics/mathematical economics.

21. Assistant Plant Physiologist: (One)

Second class B.Sc. (Agri.)/B.Sc. ii) Second class M.Sc. Botany/M.Sc. (Ag.) with specialization in Plant Physiology/M.Sc. in Plant Physiology or equivalent qualifications with three years experience of teaching/research in Plant Physiology preferably on nutrient requirements of field and fruit crops OR Ph.D. in Plant Physiology with specialisation in Plant Nutrition.

22. Assistant Research Officers (Plant Breeding): (Two)

i) Second class B.Sc. (Ag.)/B.Sc. ii) Second class M.Sc./M.Sc. (Ag.) in Plant Breeding/Genetics with three years' experience of research/teaching/extension in Plant Breeding OR Ph.D. in Plant Breeding/Genetics.

23. Assistant Research Officer (Plant Physiology): (One)

i) Second class B.Sc./B.Sc. (Agr.), ii) Second class M.Sc. in Plant Physiology with three years' experience in Plant Physiological work preferably on Oilseeds OR Ph.D. in Plant Physiology.

24. Assistant Professor of Extension Education: (One)

Essential: i) Second class B.Sc. (Ag.) or B.V.Sc. followed by second class Master's degree in Agril. Extension. ii) Three years experience of Extension Education or research/teaching in the subject of Extension or Ph.D. in Agril. Extension. Desirable: Ph.D. in Agril. Extension.

25. Assistant Professor of Pharmacology: (One)

i) Second class B.V.Sc. & A.H. or equivalent. ii) Second class Master's degree in Pharmacology iii) Ph.D. in Pharmacology or three years experience in Pharmacology.

26. Assistant Research Officer (Vety. Physiology): (One)

Essential: i) Second class B.V.Sc./B.Sc. (Agr.)/B.Sc. Animal Science/B.Sc. ii) Second class M.Sc./M.V.Sc. in Physiology/Animal Biochemistry. iii) Ph.D. in Physiology/Animal Biochemistry OR Second class M.Sc./M.V.Sc. in Physiology/Animal Biochemistry with three years' experience in teaching/research/extension in Physiology preferably on the feed intake in animals. Desirable: Acquaintance with the techniques assay of metabolites, VFA and steroids.

27. Assistant Professor Clinic for Interns: (One)

i) Second class B.V.Sc. & A.H. ii) Second class M.V.Sc. in Surgery/Medicine/Gynaecology. iii) Ph.D. in Surgery / Medicine / Gynaecology OR

three years' experience in Surgery/Medicine/Gynaecology.

28. Assistant Professor (Meat Technology): (One)

i) Second class B.V.Sc. & A.H./B.V.A.Sc./B.Sc. (Agri.)/B.Sc. (Animal Science). ii) Second class M.V.Sc./M.Sc. (Food Tech.)/M.Sc. (Animal Science)/M.V.P.H. with three years experience as teaching/research/extension associate or lecturer or equivalent in the area of Meat technology OR Ph.D. in any branch of Animal Products Technology.

29. Farm Manager: (One)

i) Second class B.Sc./B.Sc. (Agri). ii) Second class M.Sc. (Ag.) with 3 years experience of independent management of a large Agril. farm. OR Second class B.Sc. (Ag.) with 5 years experience of independent management of a large Agril. Farm.

Note

- For posts at Sr. Nos. 1 to 11, 13 to 18, 20 to 24 & 28, One or more of the Essential Qualifications relaxable for candidates

PAY SCALES

Sr. No. of post	Pay Scale	Total emoluments at the initial of the pay scale (exclusive of house rent).
1.	i) 1500-60-1800-100-2000-125/2-2500 (with unfurnished rent-free residence). ii) Candidates with outstanding record of research administration/research achievements can be considered for higher start in the above scale or even higher scale of Rs. 2500-125-3000.	i) Rs. 1863/- ii) Rs. 2500/-
2.	Rs. 1500-60-1800-100-2000-125/2-2500	Rs. 1863/-
3 to 15	Rs. 1200-50-1300-60-1900	Rs. 1518/-
16 to 28	Rs. 700-40-1100-50-1600	Rs. 973/-
29.	Rs. 700-40-1100-50-1300	Rs. 973/-

REGISTRAR

**INDIRA KALA SANGEET
UNIVERSITY
KHAIRAGARH (MP)
Pin: 491 881**

Applications are invited for the following posts in the University Teaching Departments, viz: One Professor of Music (Vocal or Instrumental), Three Readers one each in Painting, Kathak Dance and Folk Music or Folk Art, One Research Assistant for Folk Music/Art Department and One Technician for Tapes & Tape Recorders. Scale of Pay (likely to be revised) Professor: Rs. 1000-50-1500, Reader: 700-40-1100, Research Assistant: Rs. 350-12½-400-20-500-EB-25-600, Technician: Rs. 246-6-270-10-350-12½-400-20-460. Total monthly emoluments including D.A. and A.D.A. at the minimum for professorship—Rs. 1543/-, for Readership—Rs. 1217/-, for Research Assistantship—Rs. 592/-

and for the post of Technician—Rs. 470/- respectively.

Posts are permanent and carry C.P.F. benefits. Appointments will be on probation according to University rules.

Application Forms and details of qualifications etc. obtainable from the Registrar by sending self addressed Re. 1/- stamped envelope of 23x10 cms.

Those who have applied for any of the above posts (excepting Painting & Kathak Dance) in response to the last advertisement need not apply again. Scheduled Castes and Scheduled Tribes Candidates will be given preference according to rules.

Last date for receipt of duly completed applications is 15th July, 1979.

**D. K. Ghosh
REGISTRAR**

UNIVERSITY OF POONA PUNE-7

Applications are invited for the under-mentioned posts in (A) the University Departments and at (B) Abasaheb Garware College of Arts and Science, Pune-4.

(A) UNIVERSITY DEPARTMENTS

(1) Professors

- (1) English (Language, Stylistics and Language Teaching) (One)
- (2) Geography (One)
- (3) Statistics (One)
- (4) Linguistics (One)

(2) Readers

- (5) Archaeology (One)
- (6) Philosophy (One)
- (7) Law (One)
- (8) Linguistics (Three)
- (9) Anthropology (Physical) (One)
- (10) Mathematics (One)

(3) Lecturers

- (11) Linguistics (Three)
- (12) History (One)
- (13) Library Science (One)
- (14) Law (One)
- (15) Russian (One)
- (16) Statistics (Four)
- (17) Chemistry-Physical (One). (Tem. post) Bio.(One) (Tem. post).

(B) ABASAHEB GARWARE COLLEGE OF ARTS AND SCIENCE, PUNE-4

Reader

- (1) English (One)

GENERAL QUALIFICATIONS

(1) Professor

Must be scholar of eminence, must have to his credit research work of independent merit, must possess fairly long experience of teaching of Post-graduate classes and guiding advance research in the respective subjects.

(2) Reader

Must possess fairly long experience of teaching of Post-Graduate classes and guiding research in the respective subjects.

(3) Lecturer

Must have a Doctor's Degree or published work of an equally high standard and consistently good academic record with First or High Second Class (B in seven point scale) Master's Degree in a relevant subject or an equivalent Degree of a Foreign University.

MINIMUM QUALIFICATIONS

(1 & 2) Professor & Reader

As prescribed by the University for recognition as Post-Graduate Teacher (By Research)

(3) Lecturer

As prescribed by the University for recognition as Post-Graduate Teacher (By Papers)

SCALES OF PAY

1. Professor: Rs. 1500-60-1800-100-2000-125/2-2500
2. Reader: Rs. 1200-50-1300-60-1900.
3. Lecturer: Rs. 700-40-1100-50-1600.

All posts carry usual allowances admissible under University rules in force from time to time.

AGE LIMIT

Candidates applying for the posts of

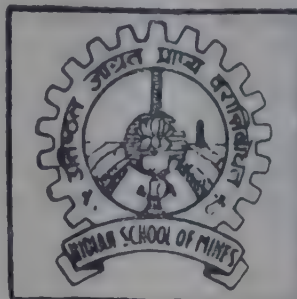
Professors should ordinarily be below the age of 50 years, those applying for the posts of Readers should ordinarily be below the age of 45 years, and those applying for the posts of Lecturers should ordinarily be below the age 35 years. However, this age limit may be relaxed in the cases of deserving candidates.

Eight copies of applications together with the eight copies of testimonials, if any, separately for each post giving particulars in the prescribed form should be sent to the Registrar so as to

reach him not later than Tuesday, the 31st July, 1979.

The prescribed set of application forms, together with requisite detailed information, will be supplied to the candidates, on request accompanied by (1) a self addressed envelope (23 cm. x 10 cm.) bearing postal stamps worth Re. 1/- for the postage, and (2) a postal order of Rs. TEN drawn in the name of the Registrar, separately, for each post. This amount will also be accepted in cash in the University Office.

(Contd. on next page)



Indian school of Mines

DHANBAD-826004

No. Adt 420003/79

Dated May 22, 1979

Indian School of Mines, which is deemed to be a University under the U.G.C. Act, wishes to recruit a Deputy Registrar (Accounts) and a Development Officer as below :

Pay Scale : Rs. 1100-1600 plus allowances as admissible to Government of India employees. Total emoluments payable at the minimum of the scale work out currently to Rs. 1,410 only.

DEPUTY REGISTRAR (ACCOUNTS)

Job Description : Responsibility for (i) internal audit of all receipts and payments (ii) ensuring proper maintenance of accounts and records, and (iii) assisting Director/Registrar in managing the financial affairs of the School, including preparation of budget estimates and preparation of statement of Accounts etc.

Qualifications

1. Pass in Final Examination of Institute of Chartered Accountants or of the Institute of Cost and Works Accountants (Essential but relaxable in case of candidates otherwise considered specially suitable and proficient in **double entry system of accounts**, to (a) a good Master's degree in Commerce, or (b) a good degree with pass in Subordinate Accounts Service Examination of the Government).
2. Experience for about ten years (relaxable to six years in the case of a Chartered or Costs and Works Accountant) in the maintenance and control of accounts in a large educational/research institution (or industrial undertaking or Govt. or Semi-Govt. Organisation) of which three years should have been in a position of responsibility. (Essential)
3. Experience in handling agenda, minutes and procedure of meetings. (Desirable).
4. Experience of administration in a residential institute. (Desirable)

In case no candidate is considered fit for the post of Deputy Registrar, the selection may be made at the level of Asstt. Registrar (in the pay scale of Rs. 700-1300/-). Persons with lesser experience (of not less than five years including two years in a supervisory capacity) may, therefore, also apply.

DEVELOPMENT OFFICER

Job Description : Mainly to assist the administration in (i)

introducing examination reforms and semester system ; and (ii) introducing of new academic programmes.

He will also be required to assist in the preparation of material for annual reports and other School publications, and in organising and providing secretarial back-up for meetings of Academic Council, Board of Research Studies, Examination Board etc.

Qualifications

1. Master's Degree in Education/Science/Arts/Commerce/Administration or a Degree in Engineering/Technology, with not less than 60% marks. (Essential) but relaxable in case of candidate otherwise considered specially suitable.
2. About six years administrative experience in an Academic institution, etc., including about three years as Assistant Registrar (or equivalent position) dealing with management of academic and examination matters. (Essential)
3. Familiarity with the implementation of Semester System and Examination Reforms, and competency to draw up relevant rules, etc. (Essential).
4. Good drafting ability.
5. Experience of organising meetings and handling agenda papers and minutes. (Desirable)
6. Capacity to develop corporate life within an educational institution.

In case no candidate is considered fit for the post of Development Officer, the selection may be made at the level of Asstt Registrar (in the payscale of Rs. 700-1300/-). Persons with lesser experience (of not less than three years including two years in a supervisory capacity) may therefore also apply.

GENERAL

1. Age—normally not more than 40 years, relaxable in case of persons otherwise considered specially suitable. Upper age limit also relaxable by five years in respect of (i) candidates belonging to Scheduled Castes/Tribes, (ii) displaced goldsmiths, and (iii) displaced persons from Bangladesh (the erstwhile East Pakistan) who had migrated on or before 1.1.1964.

2. Application in the prescribed form (obtainable from the Registrar, Indian School of Mines, Dhanbad-826004 on receipt of a self addressed envelope of the size 30 cm. × 12 cm affixed with postage stamps of the value of Rs. 3.45) should reach the Registrar on or before 30th June 1979.

3. Applications should be accompanied by a Money Order receipt for a sum of Rs. 8/- (Rs. 2/- for Scheduled Caste/Tribes candidates) in token of remittance of Application Fee to the Registrar, Indian School of Mines, Dhanbad-826004.

4. Those in SERVICE should apply through their employer. If the application through proper channel likely to be delayed, an advance copy may be submitted but in such a case the original application must also reach the Registrar within 10 days of the aforesaid date.

5. The School reserves the right to consider cases of CONTACT CANDIDATES whose names have been suggested by Universities or other authorities, etc., even though they may not have formally applied for the post.

6. Candidates called for interview will be paid 1st Class railway fare for to and fro journey by the shortest route, or the actual expenses incurred, whichever is less.

Canvassing in any form will be considered as disqualification.

S. P. VARMA
REGISTRAR

(Contd. from previous page)

The applicants, in their letters, asking for set of application, must specify (i) the name, and (ii) the serial number of the post, for which they want to apply.

The selected candidates will be on probation for a period of two years and will be required, to contribute to the University Provident Fund and to enter into an agreement of service with the University. They will also have to pass a test in elementary Marathi, at the time of confirmation, if Marathi is not their mother tongue.

Notes

- (1) Those who are employed must submit their applications through the proper channel.
- (2) Some of conditions may be relaxed in the case of exceptionally capable candidates.
- (3) Candidates called for interview will have to present themselves for an interview at their own expense.
- (4) Canvassing, direct or indirect, will be a disqualification.
- (5) In the case of lecturers other things being equal, preference will be given to candidates belonging to Scheduled Castes (including Scheduled Castes converted to Buddhism) and Scheduled Tribes.
- (6) Higher starting salary may be given to deserving candidates.

G. J. Abhyankar
REGISTRAR

UNIVERSITY OF DELHI DELHI-110007

Advt. No. Estab. IV/59/79
Dated June 7, 1979

Applications on the prescribed forms are invited for the following posts:

Department and Designation
Modern Indian Languages—One
Reader in Gujarati
Hindi—One Reader, Specialization:
Drama & Stage Craft
Linguistics—Two Readers
Botany—One Reader
One S.T.A. (Technician)

Faculty of Science—One Reader in
History of Science and Scientific
Methods
Central Office—Two Deputy Registrars (One temporary but likely to continue, another for Vice-Chancellor's Office).

W.U.S. Health Centre—Three Medical Officers, Two Pharmacists*. (One each reserved for S/C & S/T.), Two Attendants (temporary but likely to continue) (One post is reserved for S/T.)

Central Science Facility—One Electronic Engineer.

*Note

General candidates would also be eligible to apply. The general candidates would, however, be considered only if no suitable Scheduled Caste/Scheduled Tribes candidates are available for appointment to the vacancy reserved for them.

The scale of pay of the posts are:

Reader : Rs. 1200-50-1300-60-1900.
Electronic Engineer: Rs. 1500-60-1800-100-2000

Deputy Registrar: Rs. 1100-50-1600.
Medical Officer : Rs. 700-40-900-EB-40-1100-50-1300 plus non-practising allowance (as admissible under the University rules).

Senior Technical Assistant (Technician) : Rs. 550-25-750-EB-30-900.

Pharmacist : Rs. 330-10-380-EB-12-500-EB-15-560.

Attendant : Rs. 210-4-250-EB-5-270.
All posts carry D.A., C.C.A. and H.R.A. as admissible under the rules in force in the University from time to time.

ESSENTIAL QUALIFICATIONS FOR Readership

Good academic record with first or high second class Master's Degree in the subject concerned with a Doctor's Degree or equivalent published work.

Independent published work (in addition to the published work mentioned above) with atleast 5 year's teaching experience in Honours/Post-graduate classes essential.

Electronic Engineer (Central Science Facility)

Second class Post-graduate degree in Engineering or Science with at least 10 years' experience with proven ability in maintenance and repairs of Electronic/Electrical/Scientific equipment.

Note

Post-graduate degree in Engineering or Science means degree such as M.B., M.Tech. in Engineering in any branch, M.Sc. degree in case of Science in any of the subjects such as Physics, Chemistry etc.

Proven ability in designing and building major instruments. Capacity to lead and direct R & I activity instrumentation. Working knowledge with modern analytical instruments.

Deputy Registrar

A Second Class Master's degree and experience of educational administration at the executive level for atleast 8 years.

Medical Officer

M.B.,B.S. degree from a recognised University. Minimum 3 years' experience after passing M.B.,B.S. required. Candidates with Post-graduate qualifications or hospital experience will be preferred.

Senior Technical Assistant (Technician)

M.Sc. Physics with Electronics as a special paper or Bachelor's degree in Electronics or Diploma in Electronics with 5 years experience of handling of Electronics Laboratory Equipment.

Pharmacist

Matric or equivalent. Must have passed the (Pharmacists) (Compounder Courses from a recognised institution and must be a registered Pharmacist).

Two years' experience in the profession is desirable.

Attendant

Matriculation.

SPECIAL/DESIRABLE QUALIFICATIONS FOR Readership in Gujarati (MIL)

Sound knowledge of Comparative Literature.

Readership in Linguistics

Theoretical Linguistics with one of the following additional specialisations:

(a) Socio-linguistics (b) Generative Semantics (c) Computational Linguistics & Experimental Design.

Deputy Registrar

Experience of University administration and familiarity with the working of University bodies and institutions including admissions, College administration, accounts rules relating to fixation of pay and Inspection of Colleges.

The prescribed application form can be had from the Information Office of the University either personally or by sending a self addressed envelope (size 5" x 11") with postage stamps worth Rs. 2.85.

The candidates will have to produce the original documents relating to their age, qualifications, experience, etc. at the time of interview.

Applications (separate for each post) accompanied by attested copies of Degrees, other certificates, marksheets, published research articles, etc. should reach the undersigned not later than 29 June, 1979.

Note

1. It will be open to the University to consider the names of suitable candidates for teaching posts who may not have applied. Relaxation of any of the qualifications may be made in exceptional cases, in respect of all teaching posts and for the posts of Deputy Registrars on the recommendation of the Selection Committee.

2. Canvassing in any form by or on behalf of the candidates will disqualify.

3. Candidates from outside Delhi, for teaching posts only called for interview will be paid to and from single second class rail fare.

4. Those who have applied in response to the earlier advertisement for the posts of Readers in Gujarati, Hindi, Linguistics, Botany, History of Science and Scientific Methods and the post of Deputy Registrar (temporary but likely to continue) need not apply again but in case they have any additional information to supply they may do so.

5. The University reserves the right not to fill up any of the vacancies advertised, if the circumstances so warrant.

R. V. Raman
REGISTRAR (OFFG.)

OSMANIA UNIVERSITY HYDERABAD-500 007, (A.P.)

Addendum to the Advt. No. 7/79

The last date for receipt of application forms for the post of Lecturers in Business Management only has been extended upto 9th July '79.

REGISTRAR

PANJAB UNIVERSITY CHANDIGARH

Advertisement No. 9/79

Applications are invited for the following posts so as to reach the Registrar, Panjab University, Chandigarh, alongwith the postal order for Rs. 10/- by 9.7.1979. Fourteen days extra time is permissible to the persons who have to submit their applications from abroad.

POSTS, SCALE OF PAY AND QUALIFICATIONS

1. **Professors** (Rs. 1500-60-1800-100-2000-125/2-2500)

Biochemistry-1, Botany-1 (Plant Physiology), Zoology-3 (Cytology & Cytogenetics-1, Parasitology-1), Department of Chemical Engineering & Technology-2.

QUALIFICATIONS

Essential

- A first or high second class Master's degree of an Indian University or an equivalent qualifications of a foreign University in the subject with bright academic record;
- Either a research degree of doctoral standard or published research work of high standard in journals of repute,
- About 10 years experience of teaching post-graduate classes and/or research; and
- Experience of guiding research at Doctoral level.

OR

An outstanding Scholar with established reputation who has made significant contribution to knowledge in the discipline concerned.

Department of Chemical Engineering & Technology

(Chemical Technology-1, Reaction Engineering & Process Dynamics-1)

QUALIFICATIONS

Essential

For Chemical Technology

First class Bachelor's degree in Chemical Engineering followed by Master's/Doctorate degree or a first class Master's degree in Chemical Technology / Technical Chemistry / Applied Chemistry followed by a doctorate with adequate knowledge of Chemical Processes industries Design and Operational details. A minimum of 7-10 years' distinguished experience in teaching/research in an Engineering institution or a University at undergraduate and postgraduate levels is required.

For Reaction Engineering & Process Dynamics Essential

First class Bachelor's degree in Chemical Engineering followed by Master's/Doctorate degree with a minimum of 7-10 years distinguished experience in teaching/research in an Engineering institution or a University at undergraduate and postgraduate levels.

Desirable
For both the posts.

Professional/scientific work of outstanding merit.

2. Readers-2 (Rs. 1200-50-1300-60-1900)

Department of Chemical Engineering & Technology

Chemical Engineering (Transfer Processes-1) Chemical Engineering (Process Engineering)-1

Out of these two posts one is temporary, but likely to be permanent.

Essential

First class Bachelor's degree in Chemical Engineering followed by Master's/Doctorate degree with minimum of 5 years experience in teaching/research in an Engineering institution or a University.

Desirable

Specialised knowledge in the field mentioned with outstanding teaching/research experience and Doctorate degree or published work of equal standard.

Readers (Rs. 1200-50-1300-60-1900)

Biophysics-1, Microbiology-2 (Immunology-1, Microbiology-1, temporary but likely to be permanent), Chemistry-1 (Analytical Chemistry), Geology-1 (Himalayan Geology, temporary, but likely to be permanent), Pharmaceutical Sciences-1 (Pharmaceutics, temporary, but likely to be permanent).

QUALIFICATIONS

Essential

- A first or high second class Master's degree of an Indian University or an equivalent qualifications of a foreign University in the relevant subject with bright academic record.
- Either a research degree of doctoral standard or published research work of high standard in the subject concerned in journals of repute.
- About five years experience of teaching post-graduate classes and/or research; and
- Competence to guide research.

Evidence of being engaged in making innovation in teaching methods and production of standard teaching material, will be an additional qualifications.

Essential Desirable

For the post of Reader in Microbiology (Immunology)

M.Sc. in Microbiology / M.V.Sc., M.B.B.S., Ph.D. in Immunology Chemistry or Immunology.

M.D. in Immuno - Pathology, Research and Teaching experience in the subject of Immunology, Immunochemistry and Immunopathology.

For the post of Reader in Microbiology

M.Sc./M.V.Sc. / M.B.B.S / M.D. in Microbiology. Experience in area of Molecular genetics or Fermentation technology.

Desirable

For the post of Reader in Biophysics.

Specialisation in Neuro-physiology/

Electron Microscopy/Molecular Biology/Cell Biology/Radiation Biophysics.

3. Lecturers-4 (Rs. 700-40-1100-50-1600)

Department of Chemical Engineering & Technology

(Permanent-1, Temporary-3, but likely to be made permanent)

QUALIFICATIONS

Essential

First class Bachelor's degree in Chemical Engineering followed by a Master's degree.

Desirable

i) Two years' industrial / research / teaching experience in an Engineering institution or a University.

ii) Doctorate degree or published work of equal standard.

Lecturers (Rs. 700-40-1100-50-1600)

Anthropology-2 (Physical Anthropology-1, temporary, but likely to be permanent, Temporary-1), Biophysics-2 (Permanent-1, Temporary-1, but likely to be permanent), Biochemistry-1, temporary, but likely to be permanent, Microbiology-2, (Lecturer in Virology-1, Lecturer-cum-Curator-1), Chemistry-3 (Inorganic Chemistry) (Permanent-2, Temporary-1), Geology-4, temporary, but likely to be permanent, Pharmaceutical Sciences-2, temporary, but likely to be permanent (Pharmaceutical Chemistry-1, Pharmaceutics-1), Physics-4, temporary, but likely to be permanent), Nuclear Reaction (Experimental)-1, Particle Physics (Theoretical)-1, Mass Spectrometry or Geo-Chronology, Vacuum-ultraviolet Spectroscopy-1, Bubble Chamber Project-1.

QUALIFICATIONS

- A Doctor's degree or research work of an equally high standard; and
- Consistently good academic record with 1st or high second class i.e. 55% marks or more (B in the seven point scale). Master's degree in a relevant subject or an equivalent degree of a foreign University. Having regard to the need for developing inter-disciplinary programmes, a degree in (a) and (b) above may be in relevant subjects. The consistently good academic record at pre-Master's level would be interpreted as an average of 50% or above at the two examinations prior to Master's examination.

Provided that if the selection committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of a very high standard, it may relax any of the qualification prescribed in (b) above.

Provided further that if a candidate possessing a doctor's degree or equivalent research work is not available or is not considered suitable a person possessing a consistently good academic record (weightage being given to M.Phil or equivalent degree or research work of quality) may be appointed provided he has done research work for atleast two years or has practical experience in

a research laboratory/organisation on the condition that he will have to obtain a doctor's degree or give evidence of research work of equivalent high standard within five years of his appointment failing which he will not be able to earn future increments until he fulfils these requirements.

Desirable

a) Lecturer in Virology (Department of Microbiology)

- M.D./Ph.D. in Microbiology with specialisation in Virology.
- At least 3 years experience in teaching or research in the area of the Virology.
- Specialised training or experience in the Cell Culture and other modern techniques in the study of viruses.

b) Lecturer-cum-Curator-1

QUALIFICATIONS

Essential

- M.D./Ph.D. in Microbiology.
- Specific experience in the maintenance of Cultures and taxonomy and preservation of all types of micro-organisms.
- Teaching and research experience in the area of systematics bacteriology and/or Pathology,

Desirable : For the post of Lecturer in Biophysics (Permanent)

Specialisation: Electronmicroscopy/Animal Physiology/Neurophysiology.

For the post of Lecturer in Physics (Bubble Chamber Project)

- Experience in High Energy Physics especially in the Techniques of Bubble Chamber is essential.

Candidates for the posts of Professors and Readers who do not possess a doctoral degree are required to submit 10 typed/cyclostyled copies of brief resume of their published work. 15% posts of Lecturers will be reserved for the members of the Scheduled Castes and 2% for the members of the Scheduled Tribes, but these will be filled up by other if no suitable Scheduled Castes/Scheduled Tribes applicant is available.

Persons already in service should route their applications through proper channel. Incomplete forms and those received after the due date will not be entertained. Serving employees, may, however, send their applications on the prescribed performa, direct to the University. They may route another copy through their Departments. They will be allowed to present themselves for interview only on the production of a 'No Objection Certificate' from their employers. Canvassing in any form will disqualify the candidate.

Application forms can be obtained from the Cashier, Panjab University, Chandigarh, personally on payment of Rs. 2/- or by making a written request to the Finance & Development Officer, Panjab University, Chandigarh, accompanied by self-addressed stamped envelope of 23X10 cms and a postal order for Rs. 2/- drawn in favour of the Registrar, Panjab University, Chandigarh.

THE UNIVERSITY OF BURDWAN

RAJBATI : BURDWAN
WEST BENGAL

Advertisement No. 16/78-79
Dated 30th May, 1979

Applications in the prescribed form are invited for the post of Lecturer in Zoology (Permanent) with specialization in Cytogenetics in the approved scales of pay of Rs. 700-40-1100-50-1600/- with allowances and other benefits according to University Rules.

Minimum Qualifications

1. (a) A Doctor's Degree or published research work of an equally high standard; and
- (b) Consistently good academic record with first or high second class (B in seven point scale) Master's Degree in the relevant subject or an equivalent degree of a foreign University.

The University Council may, on recommendation of the appropriate Selection Committee, waive any of the requirements in view of the candidate's specialised knowledge in the subject. The choice of the Committee may not necessarily be confined to those who apply formally.

For application form and other information apply to the Registrar with a self-addressed stamped (0.40p.) envelope (9" x 4").

Last date for submission of applications with the requisite fee of Rs. 5/- is 20th June, 1979.

A. K. Chaudhuri
REGISTRAR

BHOPAL UNIVERSITY BHOPAL

Advertisement No. 2/79

Applications on the prescribed form (obtainable free by sending a self-addressed envelope of 24 x 12 cms. size bearing stamps worth 35 paise) are invited for the post of Deputy Registrar (Development) in the scale of Rs. 750-50-1250 (likely to be revised) with benefits of C.P.F. and other allowances as admissible under the University Rules.

Qualifications and Experience

Candidate should at least be a graduate of a statutory Indian or Foreign University with preferably post-graduate qualification. At least five years' first hand experience of administrative work in an academic institution and sufficient experience in a university relating to planning, development and implementation. Working knowledge of Hindi is essential.

Age: Upper age limit 50 years on 31.5.1979.

Scheduled Castes/Scheduled Tribes Candidates will be preferred.

Persons already in service must apply through proper channel. They may send an advance copy of their application within the due date and should bring a "No Objection Certificate" from

their employer when called for interview.

Candidates shall have to appear for an interview at their own cost and produce their original degrees, certificates etc. at that time.

Applications accompanied with a Crossed Indian Postal Order for Rs. 7-00 in favour of the Registrar, Bhopal University, Bhopal should reach the undersigned by name on or before 23.6.1979.

M. G. Paithankar
REGISTRAR

ALIGARH MUSLIM UNIVERSITY ALIGARH

Advertisement No. 6/79-80

Applications, on the prescribed form, are invited for the following posts:

"Candidates must possess a Medical qualification included in the first or second schedule or Part II of the third schedule (other than licentiate qualifications) of the Indian Medical Council Act, 1956. Holders of educational qualifications included in part II of the third schedule should fulfil the conditions stipulated in Section 13(3) of the Indian Medical Council Act, 1956.

Must possess a basic University or equivalent qualification entered in schedules under State/Central Registration Act."

Professors (Three Posts) in the Department of Ophthalmology in the Scale Rs. 1500-60-1800-100-2000-125/2-2500 plus Allowances. (Plan Posts)

M.S. (Ophthalmology)/M.D. (Ophthalmology) Speciality Board of Ophthalmology (U.S.A.)

As Reader for five years in the Department of Ophthalmology in a Medical College.

Desirable

Experience in Retinal Surgery, Ocular Pathology or Strabismology.

Prescribed application forms and instructions may be had from the Deputy Registrar (Ex.) either personally or by sending a self-addressed envelope of 23 x 10 cm. Last date for receipt of applications is 30th June 1979. Incomplete applications and those received late may not be considered.

Higher initial start may be given to candidates possessing exceptional qualifications and experience. Candidates interviewed may be paid contribution towards their T.A. equal to one single Second Class Railway fare only.

Jamalur Rahman
REGISTRAR

THE MAHARAJA SAYAJIRAO UNIVERSITY OF BARODA BARODA

NOTIFICATION No. 3

Applications are invited for the following posts in the Faculty of Technology and Engineering:

Sr. No.	Department	POSTS	
		Professor	Reader
1.	Civil	1	2
2.	Applied Mechanics	—	2
3.	Pharmacy	2	1
4.	Electrical	2	4
5.	Mechanical	—	3
6.	Metallurgical	1	2
7.	Textile Engineering	1	2
8.	Textile Chemistry	1	2
9.	Applied Physics	—	1
10.	Applied Chemistry	—	1
11.	Applied Mathematics	—	1
12.	Architecture	1	3
13.	Incharge of Central Instrumentation	1	—
14.	Central Instrumentation (Scientist)	—	1
15.	Central Instrumentation (Engineer)	—	1
16.	Professor of Training and Placement	1	—
17.	Chemical Engineering	1	3

Scale: PROFESSOR : Rs. 1500-60-1800-100-2000-125/2-2500
READER : Rs. 1200-50-1300-60-1600-
Assessment-60-1900. } Plus usual allowances as per rules.

Prescribed application forms alongwith details of qualifications and specialization will be available upto 14th July, 1979 from the undersigned on prepayment of Rs. 2 00 (Re. 0-50 for members of SC/ST) by means of cross Indian Postal Order payable to the Registrar, M.S. University of Baroda alongwith self-addressed envelope of 30 x 12 Cms. for each post.

The SC/ST candidate at the time of requesting for application form should attach a certificate to this effect.

The application forms accompanied by cross Indian Postal Order payable to the Registrar, M.S. University of Baroda worth Rs. 10/- (Rs. 2.50 for SC/ST candidate) for the above posts should reach on or before 21 July, 1979. The candidates if called for interview will have to come at their own expenses.

K. A. Amin
REGISTRAR

JAWAHARLAL NEHRU UNIVERSITY

NEW DELHI-110067

Advt. No. Aca. III/16/79

Applications are invited for the following posts:

SCHOOL OF SOCIAL SCIENCES Centre for the Study of Regional Development

1. Associate Professor / Fellow in
Regional Geography

Qualifications

Essential

- Consistently good academic record with at least a high second class Master's Degree in Geography or an equivalent qualification from an Indian or foreign University;
- A doctor's degree or published work of an equally high standard; and
- About five years experience of teaching and/or research.

Area of Specialisation required

Regional Planning.

2. Associate Professor in Physical
Geography

Qualifications

Essential

- Consistently good academic record with at least a high second class Master's degree in Geography or its equivalent qualification from an Indian/foreign University;
- A Doctor's degree or published work of an equally high standard.

Area of Specialisation required

Geomorphology and/or Climatology.

Desirable

Some teaching or research experience.

3. Assistant Professor in Economics

Qualifications

Essential

- Consistently good academic record with at least a high second class Master's degree in Economics or its equivalent qualification from an Indian/foreign University;
- A Doctor's degree or published work of an equally high standard.

Area of Specialisation required

Regional Economics.

Desirable

Some teaching or research experience.

SCHOOL OF INTERNATIONAL STUDIES

Centre for West Asian and
African Studies

4. Associate Professor/Fellow in Gulf
Studies

Qualifications

Essential

- Consistently good academic record with at least a high second class Master's degree in Economics or an equivalent qualification from an Indian/foreign University;
- A doctor's degree or published work of an equally high standard relating to international trade and development with experience in applied work; and

- About five year's teaching and/or research experience.

Desirable

- Experience of supervising research relating to International Trade and Economic Development;
- Special interest in economic problems of West Asian Gulf countries.

SCHOOL OF LANGUAGES

Centre of African and Asian Languages

5. Assistant Professor in Persian

Qualifications

Essential

- Consistently good academic record with at least a high second class Master's degree in Persian or its equivalent qualification from an Indian/foreign University; and
- A doctor's degree or published work of an equally high standard.

Desirable

- Knowledge of History of Persian Language and Literature.
- Knowledge of Modern Persian.
- Knowledge of Indo-Persian relations.

Provided that in the case of Assistant Professors if the Selection Committees are of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard, it may relax any of qualifications prescribed in (a) above.

Provided further that if a candidate possessing a Doctor's degree or equivalent research work is not available or is not considered suitable, a person possessing a consistently good academic record (weightage being given to M.Phil. or equivalent degree or research work of quality) may be appointed provided he/she has done research work for at least two years or has practical experience in a research laboratory/organisation on the condition that he will have to obtain a Doctor's degree or give evidence of research work of equivalent high standard within five years of his appointment, failing which he will not be able to earn future increments until he fulfils these requirements.

SCALES OF PAY

Associate Professor/Fellow: Rs 1200-50-1300-60-1900.

Assistant Professor: Rs. 700-40-1100-50-1600.

Plus usual allowances as admissible to the members of the staff in the Central Universities.

Relaxation in any of the qualifications may be made (a) in favour of persons of eminence or of high academic professional distinction, and (b) in exceptional cases where adequately qualified persons are not available but are otherwise found suitable for the respective positions. It will also be open to the University to consider the names of suitable candidates who may not have applied.

The selected candidates will be ex-

pected to participate in the teaching and research programmes in the concerned disciplines in other Schools of the University as well as in the programmes offered in their own Centres of Studies.

Normally appointment of Fellows is made on contract basis for a period ranging from one to three years.

Benefits of C.P. Fund-Cum-Gratuity/G.P. Fund-cum-Pension-cum-Gratuity are available as per University rules.

Persons already in employment should route their applications through proper channel.

Due consideration will be given to candidates belonging to SC/ST at the level of Assistant Professor.

Second class (mail) rail fare (both ways) will be paid to candidates invited to appear for interview from outstation by the shortest route subject to the production of rail receipt.

Applications, separate for each post, on the prescribed form, obtainable free of cost from the University by sending a self-addressed and stamped envelope of 23 cm x 10 cm, size to the Deputy Registrar (Academic), Jawaharlal Nehru University, New Mehrauli Road, New Delhi-110067, should reach him latest by 30.6.1979.

Candidates from abroad, applying for faculty positions, may apply on plain paper, (but their applications should reach the University by the last date) furnishing all the relevant informations such as their names, date and place of birth; marital status; nationality; state of domicile; postal and permanent addresses; father's names and address; academic and professional attainments; full details of (a) publications, and (b) research projects undertaken; language(s) known; details of visits to foreign countries; and the name and addresses of at least two persons well acquainted with the candidate's professional work who should also be requested by the candidate to forward to the Deputy Registrar (Academic) confidential report concerning the candidate.

THE UNIVERSITY OF KASHMIR

SRINAGAR-190006
NOTICE

Applications in the prescribed forms are invited for the post of Reader in Urdu which should reach the undersigned on or before 25th June 1979.

The prescribed application forms can be had from the counter on payment of Rs. 6/- or by sending a crossed Postal Order drawn in favour of the Registrar cashable at Srinagar Post Office alongwith a self addressed envelope (5" x 11") with the necessary postage.

Candidates are advised in their own interest to send their detailed curriculum vitae in advance.

The details in respects of qualifications for the post can be had from the office of the under signed.

Peerzada Ghulam Hassan
DEPUTY REGISTRAR (Admn.)

University lews

A FORTNIGHTLY CHRONICLE OF HIGHER EDUCATION & RESEARCH JULY 1, 1979

C.F.T.R.I., MYSORE



Shri Dhanna Singh Gulshan, Union Minister of State for Education and Social Welfare, Mrs. Jaishri Banerjee, Social Welfare Minister of Madhya Pradesh, Shri Kanti Chaudhari, Vice-Chancellor and Justice K.K. Dubey M.P. High Court at the inauguration of the Seminar on National Sports Policy held at the Jabalpur University.

BERHAMPUR UNIVERSITY BHANJA BIHAR, BERHAMPUR-7 (GANJAM) ORISSA

No. 6680/Adm/BU/78-79

Dated 12-6-79

ADVERTISEMENT

Applications are invited in the prescribed form for the following teaching posts in the University service on or before 17.7.1979.

Sl. No.	Subject	Name of the post	No of vacancies	Field of specialisation
1.	Marine Science	Professor Reader	One two	Marine Biology 1. Physical Oceanography 2. Marine Fisheries Marine Zoology
2.	Zoology	Lecturer	One	—
3.	L.S.W.	Reader	Two	—
4.	English	Lecturer	One	—
5.	Journalism and Mass Communication	Lecturer	One	—
6.	Commerce	Reader	One	—

Scale of Pay

Professor — Rs. 1500-60-1800-100-2000-125/2-2500.

Reader—Rs. 1200-50-1300-60-1900.
Lecturer—Rs. 700-40-1100-50-1600.

All posts carry usual allowances admissible under the rules in force in the University from time to time.

Essential qualification and experience

Professor

- The Professor shall be a scholar of eminence.
- Possess good academic record with a First or High Second Class Master's Degree in the subject.
- Have a doctorate degree or published work of equivalent standard.
- Have independent published research work of high standard in addition to the published work as in (iii) above; and
- Be engaged in active research and have experience in guiding research for a considerable period as evidenced by successful supervision of doctoral research.
- Be a teacher for ten years out of which at least seven years should have been spent in regular teaching in post-graduate/honours classes.

Reader

- Good academic record with a minimum of second class in the appropriate subject at the Master's degree level.
- A Doctorate degree.
- Independent published research work in addition to the published work mentioned in (ii) above.
- Teaching and research experience for eight years out of which at least five years should have been spent in regular teaching

in post - graduate / Honours classes.

Capacity to guide Research shall be regarded as an additional qualification.

Lecturer

- A Doctorate degree or published work of an equally high standard.
- Consistently good academic record with first or high second class (B+55%) Master's degree in a relevant subject or an equivalent degree of a foreign University, and
- Teaching experience will be considered as an additional qualification.

Provided that, for the post of Lecturer, if the selection committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard, it may relax any of the qualifications prescribed in (ii) above, provided further that if a candidate possessing a doctorate degree or equivalent published work is not available or is not considered suitable, a person possessing a consistently good academic record (due weightage being given to M.Phil. or equivalent degree or Research work of quality) may be appointed on the condition that he will have to obtain a Doctor's degree or give evidence of published work of equivalent high standard within Five Years of his appointment failing which he will not be able to earn future increments until he fulfils these requirements.

Seven copies of prescribed application forms will be supplied to the candidates from the office of the undersigned on payment of Rs. 10 (Rupees ten only) in person or by Bank Draft drawn on the State Bank of India in favour of the Registrar, Berhampur University, Bhanja Bihar, Berhampur-7 (Ganjam)

alongwith a self addressed envelope measuring 22×10 cms affixed with postage stamps worth 0.85 ps. No money order or cheque will be entertained.

The applications duly filled in alongwith attested true copies of certificates, testimonials and publications etc. should reach the undersigned on or before the date specified above.

Candidates who are in service should apply through proper channel.

Persons in Govt. service selected for appointment shall be allowed leave salary and pension contribution for one year only if they wish to retain their lien under Govt.

The prescribed period of experience for the post of Professor and Reader will be calculated up to the last date fixed for the receipt of applications.

Candidates will be required to appear before the Selection Committee at their own expenses. Selected candidates will be required to join the post within one month from the date of issue of the appointment order.

The University reserves the right to fill up or not to fill up the posts advertised and/or to call only selected candidates for interview.

M. Mohapatra
REGISTRAR

UNIVERSITY OF KERALA

TRIVANDRUM

No. Ad. D. II.2.4804/76

Notification

Applications are invited from qualified candidates for appointment as Reader in Economics in the University Department of Economics, Kariavattom, Trivandrum in the scale of Rs. 1125-1725.

Appointments will be made in accordance with section 6. sub section ii of Chapter II of the Kerala University Act 1974. Accordingly the post is reserved for members of Ezhava Community. If no candidate from the community is found suitable, applicants from other reserved Communities will be considered in accordance with the rules relating to communal rotation.

The details of qualifications, age etc. and application forms can be had from the Deputy Registrar (Application) University of Kerala, Trivandrum on production of a receipt for Rs. 2/- (Rupees two only) from the State Bank of Travancore or crossed Postal Order drawn in favour of the Finance Officer, University of Kerala, Trivandrum specifying the post for which application forms are required.

Those who have responded to this Office Notification of even No. dated 12-12-1978 need not apply again but their applications will be considered if they are eligible under this notification.

The last date fixed for receipt of application is 10-7-1979.

C. K. Devassy
REGISTRAR (OFFTG)

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Opinions expressed in the articles and reviews are individual and do not necessarily reflect the policies of the Association

Hony. Editor : ANJNI KUMAR

Essay Examinations are Undemocratic

Erika S. Harper*

What does democracy mean when applied to examinations? It means : equal opportunity for all to be tested in a way that limited language fluency is least harmful to the results; equal chances for all to show their true mental abilities in the most accurate means now technologically available. Both of these are possible if modern examination methods are adopted in our Indian universities and schools. Neither of these is fully provided for in the present examination system.

The present essay examination system is heavily weighted in favour of children from educated homes. Why? A person's primary ability in the use of language comes from his home surroundings. A student who comes from a home where language is used correctly already has a head start over the student who comes from a home where language is poorly developed. A villager has to learn not only the correct usages in language, but must *unlearn* the *incorrect* usages that have become a part of his habit patterns. In Hindi-medium examinations, the student whose parents use correct Hindi in the home is already ahead of the villager or slum child who uses the village or slum dialect in his home. The English-medium student from an upper class home who is surrounded by English both in school and at home has a great advantage over the student from a poor home who learns English as a second language only in his school.

Educators often ignore the fact that each person has four different levels of vocabulary for each language he/she knows. There is one vocabulary level which can be read and understood, another which is written, a third which one can hear and understand, and a fourth which is spoken. These four levels can be quite different depending upon how we have learned a language. For example, many of us can "read Shakespeare" but none can "write Shakespeare". Students can often read sentences in a second language and understand them, but cannot follow them when they are spoken. A good writer in a subject field will use a rich vocabulary which students can probably read and understand, but cannot emulate when writing. The professor uses language in his lectures which is more complicated than his students can use when trying to explain similar ideas to a classmate—or on an examination. The professor can be understood, but not copied, by most of his students.

Of the four levels of language understanding, two are *input* skills (reading and listening) and two are *output* skills, (writing and speaking).

Let us take the case of English, which is a second language for many students in India. When taught by traditional methods most students develop their largest vocabulary in *reading*. Their second largest is probably in *listening*, for they hear lectures in English. Both of these are *input* levels of language understanding. Most of our teaching emphasizes this input learning, for students are required chiefly to listen and to read in our classrooms.

Much less practice is provided for the *output* skills—writing and speaking—so that students have the lowest vocabulary development in these two areas. The chances for practising output language skills, and getting trained correction for either written essays or spoken selections are very few in our mass-education situations. Written mistakes in examinations are seldom corrected—they are only "marked"—so that students just have muddle through as best they can without ever knowing what mistakes they are making. Essay examinations require fluency in the output language skill of writing, but how many of our schools and colleges can teach or develop this fluency?

(Continued on page 357)

*Ewing Christian College, Allahabad.

Universities and National Development —Linkage with Environment

R.S.N. Sinha*

Gone are the days when pupils used to receive their education in seclusion like Gurukul away from the humdrum of the social life. The Nalanda pattern of producing monk scholars are also not possible to-day.

At the present moment the universities are to play a vital role in the national development as a lever. No development plan can flourish in an atmosphere which has not been properly prepared for, the same and this preparation of the atmosphere is specific task of the universities. In modern times universities have to develop in present social, political and technological environment and therefore this linkage has to be properly appreciated by all academicians. Universities cannot develop in a vacuum. They have to appreciate currents and cross currents of the environments with which they are surrounded. Universities and colleges cannot function peacefully in an ivory tower if the whole society is permeated with violence. For a peaceful campus we require a peaceful society. Universities and colleges cannot have their isolated existence away from the society. Social and political upheavals leave their marks on the face of the campuses. So one of the most important tasks before the academicians and the university authorities is to study the social, political and economic changes going on in the wider atmosphere of the society which is bound to have their impact on the functioning of the Universities. If the state of Bihar is disturbed the colleges and the universities are bound to be disturbed. One is wholly dependant upon the other.

The universities have not only to study the changes going on in the societies they have to play a positive role in the changes going on in the environment. They can do a lot to improve the social, political and technological factors responsible for improvement in the environment. The education has to play a vital role in the modern civilised world. Modern civilisation has devoted more energy and resources to organised education and we believe that education is or should be, the key to everything. In fact, the belief in education is so strong that we treat it as the residual legatee of all our problems. If the nuclear age brings new danger, if the advance of genetic engineering opens doors to new abuses, if commercialism brings new temptation—the answer must be more and better education.

National development requires the peaceful social, political and economic environment and it is the task of universities to create such an environment. For national development we also require technological improvement and in this field also the universities can do a lot. The universities as centres of higher education have to study, not only pollutants to the environment flowing from technological and scientific improvement but also pollutants flowing from

social, political and economic changes which may tend to damage the health of the environment. It is no wonder that whole of Bihar is burning at present as a result of the social and political pollutants flowing from the political decisions and the universities and the colleges are their first targets of attack. The problems cannot be solved by simple application of force. It requires deep and clear thinking on the part of thinker politicians, statesmen and academic elite of the state. The academic environment has to be freed from the pollutants like mutual distrust, disbelief and hatred generated by petty politicians in their own interests.

No national development is possible under the present environment which is full of distrust, disbelief and strife and strike. Development does not start with goods; it starts with people and their education, organisation and discipline. Without these three all resources remain latent, untapped potential. There are prosperous societies with scantiest basis of natural wealth and we have had plenty of opportunity to observe the primacy of the invisible factors after the war. Every country, no matter how devastated which had a high level of education organisation and discipline produced an economic miracle. In fact these were miracles only for people whose attention is focussed on the tip of the iceberg. The tip has been smashed to pieces, but the basis which is education, organisation and discipline was still there. Here, then lies the central problem of development. If the primary causes of poverty are deficiencies in these three respects; then the alleviation depends on the removal of these deficiencies. Here lies the reason why development cannot be an act of creation. It requires a process of evolution. Education, organisation and discipline must evolve step by step and the foremost task of development policy must be to speed up this evolution. All the three must become the property not merely of a tiny minority but of the whole society.

This will remove the evil effects of the dual economy in which there are two different patterns of living as widely separated from each other as two different worlds. It means two ways of life existing side by side in such a manner that even the humblest member of the one disposes of a daily income which is a high multiple of the income accruing to even the hardest working member of the other. The social and political tension arising from the dual economy are too obvious to require description. This can only be removed by providing the cultural basis of education, organisation and discipline for the eighty five percent of the population living in small towns and rural areas who are at present being bypassed in all development efforts.

The social and political tension in the present environment has to be eased by providing education to the eightyfive per cent of people living in rural

*Principal, S.K.R. College, Barbigha.

areas by establishment of universities with a rural bias so that mass migration of population to the big cities can be stopped leading to the twin evils of mass unemployment and creation of megalapolis. This mass migration to the metropolitan town produces problems of crime, alienation, stress and social breakdown; which in their turn drains out the vitality from the rural areas. The result is a dual society without any inner cohesion subject to a maximum of political instability.

This is so far as social and political pollutants are concerned which threaten present day environment and the part which education and universities have to play in it.

Now let us turn our attention to ever increasing danger to environment coming from the scientific and technological improvement. The modern world has been shaped by its metaphysics which has shaped its education which in its turn has brought forth its science. We can very well say that modern world has been shaped by technology. But the modern world shaped by modern technology finds itself involved in three crisis simultaneously. First, human nature revolts against inhuman technological, organisation and political patterns; which it experiences as suffocating and debilitating; the second the living environment which supports human life aches and groans and gives signs of partial breakdown and, third, it is clear that inroads being made into world's

non renewable resources are such that serious bottlenecks and virtual exhaustion loom ahead in quite foreseeable future. Any one of these three crises can prove to be deadly and fatal.

The ecological balance being seriously disturbed by the latest scientific and technological improvement has to be studied in the present context and the idolatry of rapid change has to be given up. Technology although of course the product of man, tends to develop, by its own laws and principles which is very much different from human nature or of living nature. There is a measure in all natural things in their size, speed or violence. As a result the system of nature is of which man is a part, tends to be self balancing, self adjusting and self cleansing. Not so with technology. Therefore the modern technology provides danger to the ecological balance existing in nature and the greatest danger; to the environment is being provided by the radiation hazards of the nuclear energy. Of all changes introduced by man into the household of nature, large scale nuclear fission is undoubtedly the most dangerous and profound. As a result, ionising radiation has become the most serious agent of pollution of the environment and the greatest threat to man's survival on earth. The universities must meet these challenges of pollutants flowing from technological, social and political changes endangering the existence of civilised life on the earth. □

Essay Examinations

(Continued from page 355)

Who has the teaching manpower to correct daily, weekly, or even monthly written material for each student?

Objective-type examinations do not require *written* fluency in language as a primary tool, but use a student's *reading* vocabulary as the major avenue of testing his thinking skills. Thus they test at a student's strongest, not his weakest linguistic level. Students have a fairer chance of demonstrating their true mental abilities than if they were confirmed to their more limited writing vocabularies.

Objective questions can be set that test nearly all the levels of mental skills desired in most college and university subjects. They can require a student to show not only factual knowledge, but also to demonstrate understanding, to show how he would apply his knowledge to a new situation, to analyze material, and to produce logical and correct solutions to problems. These skills do not require the use of elaborate multi-paged essays to be demonstrated and tested. Examiners who are well-trained in writing good objective questions can measure higher mental abilities with a high degree of objectivity and accuracy through the close choices a student must make and decisions he has to carry out. And quite complex mental abilities can often be tested using relatively simple vocabulary.

This does not mean that writing is not important. Not at all! However writing and knowledge of English should be tested in the English test and not in the Chemistry, Economics or Political Science test. Hindi should be tested in the Hindi papers and not in the Social Studies or other examination. We will get much more accurate assessment of student understandings if we separate the testing of subject matter

from language ability. Bright students who may be linguistically weak can show what they really know through objective examinations. This will provide better candidates for government and private service, and enable intellectually able students from the poorer classes come up where they should be serving.

In the 1940's in the U.S.A., selection testing for admission to universities shifted from essay examinations to large-scale use of objective-type tests. As a result, many more students from the lower social classes were admitted to the top-level eastern universities like Princeton, Yale and Harvard. They were able to show their real mental abilities unhandicapped by the need to write in a language that they, as minority groups had not fluently mastered. They competed equally with graduates of the prestigious private schools' graduates on these tests. Formerly the students of expensive private schools had been heavily coached to write good essays, and use good language, so they had received the top seats.

In an article on college admissions, Alden, Dunham, formerly Director of Admissions of Princeton University, italicized this statement :

"There is no doubt whatsoever that the current form (objective multiple-choice tests) of the college (Entrance Examination) Board tests has been a major factor in promoting upward social mobility in the United States"

There is every reason to feel that this same flexibility and social mobility could occur in India if these more truly democratic forms of examination were used—to allow students of all social levels to compete equally through their strongest language avenue, reading, rather than their weakest, writing. Only then can we hope to make our examinations more democratically "equal for all", and thereby promote social justice in our nation. □

Universities and National Development

—Linkage with Environment

Bunker Roy*

The Universities must focus their attention on critical issues of national interest designed for the socio-economic development of the rural poor like the small and marginal farmer, rural artisans, scheduled castes and harijans totalling more than 350 million people living below the poverty line of Rs. 600 per year. This means the broader issue of unemployment could be examined and how the Universities could help out by providing (i) technical and socio-economic services (ii) imparting training with a view to making communities self-reliant (iii) provide institutional support. These functions could be performed by the University by establishing sub-centres—Mini-Rural Universities—in the villages. At the same time this base could be used for collecting data for social science research.

Suggestions

1. As a start the Universities must make an inventory of all the existing voluntary agencies working in the field within easy reach and then start a dialogue on how best they can work with each other (e.g. exchange of resources, personnel and equipment).

2. The University must start thinking in terms of establishing a sub-centre in the village far enough not to be directly influenced by the University but close enough for the personnel to commute to the site without difficulty.

3. Start a cell for giving advice to those students who are keen to keep working in the rural areas. There are many students who after being exposed to the rural areas through the NSS want advice on how to carry on, what they should do, where to get the funds, whom to contact, job opportunities in other voluntary agencies etc. There should be a cell in each University that can provide such information to students. At least this will professionalise rural development effort of the voluntary agencies—an input missing in many agencies.

Linkage with Environment

It is not too late to do some soul searching now. There are many critical questions that remain unanswered. Perhaps it is premature to expect the solutions to appear so soon and so easily. Assuredly it will not be for want of trying that the Universities have not been able to assert their influence enough on issues of national development affecting the lives of millions of people. But at the same time it must be said that the strategy so far of attempting to get involved in the fundamental problems facing the people, the impoverished people, of this country has finally resulted in the dissipation of resources and skills when the idea all the time was to disseminate, distribute, percolate—call it what you will. Over the

years the educational system has proved, if at all, the splendid isolation of the Universities from the everyday problems of over 300 million people living, working and surviving in the rural areas.

If we have to ask ourselves what is meant by National Development, to be sure there is no one interpretation. However it is possible, more or less, to indicate the broad terms of reference relevant to the Universities at large. When we talk of national development obviously we have the 80% of India's population living in the rural areas in mind. The other 20% who are enjoying all the benefits, the resources, the knowledge, the skills and the comforts society has to offer, who regrettably have everything they do not want to share with others do not, to my mind, need to be considered at all. If that be the case what are the immediate problems facing them today that the Universities need to take note of. Of course I will not be saying anything original this is just to put the issues in the proper perspective. According to Prof. Raj Krishna of the Planning Commission more than 20.4 million are unemployed and under-employed. These figures are alarming by any standards and the Universities by churning out graduates are not helping out one bit especially when, because of circumstances the graduates coming out today are unemployable. What can the Universities do to help? The Elders must sit together and come up with something practical. One alternative might be to start some more relevant sources but the view from the field seems to be very grim indeed and this is simply because the options suggested are always an intellectual one designed to avoid realities, conflicts and controversies. How long can this go on for? For instance the most glaring weakness in all their overtures to be a part of the national development effort has been their inability to go out of their ivory towers into the field and to mix with the common people. Instead they expect to be pampered, they expect to be noticed and they are liable to sulk if they are not given enough attention and this is because they have been made to believe that only an intellectual is competent enough to give practical suggestions, only intellectuals have the ability to predict and imagine practical solutions based on theoretical models—how this has come about has baffled me. Without the practical experience, without the necessary exposure to real life problems—it is not enough to read reports and studies and research papers—their contribution in the national development process will always remain negligible and insignificant. Also their competence to tackle the other problems facing the rural people will be open to question and criticism. Fundamental problems that the Universities are quite capable of grappling with head on (a) like providing technical

*Director, Social Work and Research Centre, Ajmer.

and socio-economic services (b) imparting training to the rural people in simple and basic skills with a view to making them self reliant; (c) providing the institutional support necessary to see that scheduled castes, small and marginal farmers, rural artisans and harijans totalling over 350 million get their due share of the various schemes implemented by the government for their own socio-economic development. There are some 125 Universities all over the country. The fundamental infrastructural problems I have just mentioned if tackled by the Universities in their region can have a tremendous fall out effect in human terms because in the ultimate analysis when we talk of national development we are talking of the development of people, human beings all.

The obvious inability of the Universities to develop human beings, make them think for themselves and think constructively has been by far the greatest failure of the higher educational system. Sheer numbers alone perhaps is responsible for the quality suffering drastically but that is no excuse for the priorities being what they are now. That is no excuse for the Universities giving more importance to Intellect at the expense of Labour: getting degrees after degrees may make a man more literate but it does not make him more educated. It is as important that a man knows Boyle's Law or Chaucer or Plato and the inside of a tractor or diesel engine: to dirty one's finger nails or change the spare wheel of a car does not make him a lesser human being. Good fences may make good neighbours (Robert Frost) but that does not mean they should not talk to each other or learn from each other. The very fact that labours are important and the Vice-Chancellors are supposed to be the repository of all knowledge and the source of all solutions, the very fact that we call them teachers presumes they have nothing more to learn which is a tragic fallacy.

If the Universities have to commit themselves to the national development process they have to take the stand that they are also a part of a learning process. The solutions to fundamental problems do not lie with the intelligentsia (or what we term as the intelligentsia) but in the process of give and take, in the process of learning and unlearning, in discussion not imposition, in living and working together. In other words giving equal importance to Intellect (the professional-doctor, teacher, engineer, economist, agricultural graduate, social worker) and Labour (small and marginal farmer, rural artisan, scheduled caste and harijan). Bring them face to face without intermediaries. This is what Mahatma Gandhi meant when he talked of Intellect and Labour.

In order to be able to give equal importance to both and learn from each other it is for the Universities to take the initiative and link itself up with the Environment—the learning Environment, the environment that gives rise to these fundamental problems that are coming in the way of raising the socio-economic lives of the rural poor, the environment that the Universities know nothing about but which is responsible for the many ills that Universities have

to contend within the campuses—violence, frustration, destruction, indiscipline. Trace it back to where it started from and one will find it all started from the village, the rural areas. Who goes to the Universities from the rural areas? Not children of parents who are small and marginal farmers or rural artisans, or scheduled castes or harijans: not in fact the 78% of farmers in India who own on an average less than 2 hectares—they cannot send their children to school let alone to college. It is the 3.9% of the farmers, the upper castes who own more than 30% of the total land under cultivation in India, who can afford high yielding varieties of seed, chemical, fertilisers, pesticides and tractors, who own land and encourage bonded labour and pay well below the stipulated minimum wages who send their children to colleges and Universities. More often than not they are responsible for the disruption of University life. The answer lies in the better understanding of the rural environment and the rural people. It lies in a closer link between the University and the villages not through intermediaries and through second and third hand sources but through direct exposure. If Universities can manage to open their own little centres in villages within reach of the University campus and accessible to the learning staff from various disciplines instead of being content with the current NSS effort or with 'work experience' ventures then in due course they will come to a better understanding of the formidable issues that make university education so irrelevant today. From these sub-centres—small Rural Universities one could call them—it will be possible to (a) provide technical and socio-economic services (e.g. locate water with geophysical instruments, dispense medicines, immunisation of children, preventive health programmes for TB, etc. provide teaching aids in primary schools, provide soil and water testing services for farmers, start a small news letter only for a cluster of villages around) (b) impart training in basic skills from the same centre instead of transporting them to urban areas and disorienting them totally. It is essential the training is given in the habitat they are used to or the educational content is missed, (c) from this sub centre the Universities could get to know the rural poor better, educate them on the schemes and projects that the government has started for them and then see to it that they take advantage of it.

But much more important than these functions the sub centre of the University can perform is the vast indirect benefits the University can get out of this move. There is ample scope for research in the various fields of social science. It will help in better understanding the type of rural students who come to the Universities and how it might be possible to contain the growing frustration spilling over in violent forms of dissent and other desperate acts leading to senseless destruction. It will give an insight into the reasons why poorer rural parents do not send their children to colleges when they can afford to do so: if this spurs the University to offer opportunities to the rural poor by changing the terms of reference for admission, recruitment and the like it is worth it.

(Continued on page 364)

Andhra Vice-Chancellors Meet

The Vice-Chancellors of the State Universities of Andhra, Osmania, Sri Venkateswara, Nagarjuna, Kakatiya and Jawaharlal Nehru Technological met recently in Visakhapatnam to consider the reports on university administration, examination reforms, vocationalisation at plus two stage and master plan for the location of intermediate colleges. The three day conference was presided by the State Education Minister, Shri B. Venkatarama Reddy.

The Committee headed by Prof. G. Ram Reddy, Vice-Chancellor of Osmania University in the report had made various suggestions on university administration for democratisation of the university bodies—senate, syndicate and academic council, mode of appointment of Vice-Chancellors, creation of posts of

presented at the conference had recommended that undergraduate studies should have year-wise examinations without detentions. Admissions to the postgraduate studies should be through the entrance examinations which may include the testing of general reasoning—ability with a 50 per cent weightage to the qualifying marks obtained by the student at the degree level. The committee has recommended substitution of present system of evaluation by a seven point grading system at the postgraduate level. Semester system for all the universities extending over 14 to 16 weeks duration has been suggested. Lectures per week should be restricted to a maximum of two while twice that number should be devoted to seminars and tutorials. The committee has also

Inaugurating the All-India Seminar on National Policy on Education held recently in Hyderabad, Mr. M. V. Rajagopal, former Vice-Chancellor of Jawaharlal Nehru Technological University said that the objectives of the draft policy on education concerning universal compulsory education and adult education programme posed a challenge to the society. He appealed to the people to cooperate with the Government in achieving these goals. Vocational training was very important for survival of the nation. He said proper assessment of the employment potential had not been made in the country as a result of which the students preferred academic courses to vocational training. Although the system of internal assessment was good, it had not worked properly.

Shri B. Venkatarama Reddy, State Education Minister in his valedictory address stressed the need to solve the problem of illiteracy by introducing multiple entry at the primary level and part-time schools. He called for a change in syllabus and teaching methods and suggested introduction of environmental studies combining social and pure sciences. Teaching in the classroom could not give the rich experience to the students unless they were taken for spot observations. He said that there was urgent need to convert junior colleges into community colleges. Complete vocationalisation and job orientation with stress on agro-industries using minimum technology and maximum manual effort could be tried as an experiment.

The Seminar felt that the objectives of education should be recast to make it a vital instrument of social transformation. The individual citizen should be trained to contribute to promote and strengthen democracy, secularism and socialism.

The Seminar was organised by the Institute of Education & Culture, Hyderabad and sponsored by the All-India Federation of Educational Associations, New Delhi.

CAMPUS NEWS

Rectors, rotation of heads of departments and university service commission. The report suggested setting up of a grievance committee and elaborated the relationship between the government and universities.

Professor M. Santappa, Vice-Chancellor of Sri Venkateswara University presented a master plan for the location of intermediate colleges to check their mushroom growth during the recent years. The committee has also highlighted the manpower requirements of these colleges.

The committee headed by Professor K. Venkataramaiah, Vice-Chancellor of Kakatiya University reviewed the present examination system both at the university and college level and suggested a new combination of courses mostly at the degree level. The committee in its interim report

recommended to the Government to initiate action to evolve a broad-based uniform course structure and examination pattern for the professional courses in engineering, technology, law, education. The recommendations include introduction of work experience in the undergraduate curriculum.

The Vice-Chancellors conference also considered the report presented by the State Education Minister on vocationalisation at plus two stage from the next academic year. The proposal envisages vocationalisation in agriculture, engineering and technology, health and medicine, marketing and commerce and home science at the initial stage. The Education Minister said at the conference that the Government was keen to improve the educational system.

PAU students participate in rural reconstruction programmes

About 200 students of the Punjab Agricultural University including 165 girls participated in the youth for rural reconstruction programmes organised recently in the different villages of Ludhiana district. The camps are organised generally twice a year in different villages and about 600 students of the university participate in different programmes conducted by the National Service Scheme. The students of the college of agriculture conducted classes for the school-going children and did manual labour for construction of a primary school at village Rannian. The campers helped the villagers in controlling rats, eradication of weed from the fields and gave them lessons in preservation of farm products. The engineering students gave instructions to the farmers about maintenance and proper operation of their tractors and farm machinery. Free medical check-up was done by doctors. The girls of the College of Home Science proved helpful in developing a sense of awareness among the women community by giving them lessons in house-keeping. The students of the Veterinary College did earth work on a two Km. long road connecting two villages.

Semester system suggested at plus 2 stage

Shri C. Aranganayagam, Tamil Nadu Education Minister said recently in Coimbatore that the state government was actively considering the introduction of semester system which had proved a success in colleges in the state in plus two stage to improve academic standards. The Minister announced that the college complex scheme would be implemented in a phased manner during the year where four or five higher secondary schools would be linked to a college for the benefit of schools. The college teachers would be asked to visit higher secondary schools to hold discussions with the se-

condary teachers to develop an interaction between them.

Karnatak Varsity organises psychologists convention

The Karnatak University organised recently a special convention of the Indian Psychological Association to commemorate the centenary celebrations of experimental psychology. Shri B. Subbayya Shetty, State Education Minister said at the inaugural session that the state and central agencies should utilise the services of psychologists for developmental programmes. The psychologists should take the initiative to join the mainstream of developmental activities without waiting for an invitation. The State Minister said that psychologists had to face severe challenges when they inquired into the delicate problems of politics, conflicts, youth unrest, class struggle and motivating forces behind them.

Prof. B. Krishnan, President of the Association said that unless psychologists stood up to the demands made on them, they would lose the opportunity to serve the nation. Sustained work on national issues had to be maintained in the university departments and research institutions to raise the quality of research to meet international standards. Prof. Krishnan called upon psychologists to work for the growth of the subject to cater to the needs and fuller development of the potentials of the people taking into account their cultural roots.

Prof. S.S. Wodeyar, Vice-Chancellor of the University welcomed the delegates to the convention.

Space research scientists meet

Addressing the twenty-second meeting of the Committee on Space Research of the International Council of Scientific Unions held recently in Bangalore, Prime Minister Shri Morarji Desai said that scientists should ensure that physical science was used for developmental purpose and for the betterment of mankind. He said science could help to bring out the better part of the man and

space science would quicken the progress of mankind.

Prof. V. Ramalingaswami, President of the Indian National Science Academy addressed the plenary session and said collective social benefits should be the goal of science. Referring to the spectacular advances made in the field of space science, he said the present day need was for inter-disciplinary approach, which meant less walls and 'more bridges.' Technology based on physico-chemical sciences often required another form of technology based on the social and behavioural sciences to make it viable, adaptable and acceptable to local, social and cultural circumstances.

Prof. Yash Pal, Director of Space Applications Centre said that through space communication a country could conduct programmes on national integration, industrial growth, programmes in formal and non-formal education to support agricultural and family welfare activities.

About five hundred scientists from different parts of the world participated in the meeting jointly organised by the Indian National Committee for Space Research and Indian Space Research Organisation.

Nagari script conference

Addressing the concluding session of the three-day Nagari script conference held recently in Bangalore, Shri Govind Narain, State Governor stressed the need for developing Devnagari as an additional script in the country as it was powerful and capable of promoting national integration. He said the Nagari script was an international script and could also serve as a link script in the country. The script could help in the success of the three-language formula. The Central Institute of Indian Languages at Mysore had evolved an easy way of learning the Devnagari script.

The conference which was attended by about one hundred and fifty delegates from all over the country resolved to make an effort to identify Devnagari script as an additional script.

AAFI plan for comprehensive training

The Amateur Athletic Federation of India has drawn up a comprehensive plan for training and competition of the athletes in preparation for various forthcoming international events particularly the 1982 Asian Games scheduled to be held in New Delhi. The Secretary of the Federation said recently in Chandigarh that the action plan had been circulated to all the states and sports bodies for a wider debate after which it will be sent to the Union Education Ministry for approval. The probabilities to the games will be selected on the basis of their performance in inter-varsity and inter-state meets, national and rural sports, women sports festivals, open meets and institutional meets.

NEHU seminar on tribal religions

Inaugurating the seminar on the religion and society in North East India organised by the Philosophy Department of the North Eastern Hill University, Shillong, Shri L.P. Singh, State Governor called for historical, psychological and philosophical studies on the tribal religion of the entire region. He said religion and society of the tribals of the region had received little academic attention in recent times. Most of the studies in the field published during the first four decades of the present century dealt with the tribes of Arunachal Pradesh. After independence not much had been written by scholars about the tribes of the North East region as a whole. Shri Singh said that there had been a marked change in the sphere of religion of the region during the last few decades. The period has also noticed a progressive decrease since 1951 in the proportion of tribal population professing the traditional tribal religions. The tribal religions in the region have given place to other organised religions.

Dr. A.K. Dhan, Vice-Chancellor of the North Eastern Hill University welcomed the delegates to the Seminar which was attended by a number of speakers repre-

sending a cross section of the society.

New Varsities in Karnataka

Shri B. Subbayya Shetty, Karnataka Education Minister said recently in Dharwar that a Commission would be appointed soon to work out the modalities on establishment of the universities at Gulbarga and Mangalore. The Commission would examine the reports submitted by Karnatak and Mysore Universities on the proposals for starting the new universities. The Minister said the suggestion to set up a separate examination board for the three universities in the state was under the active consideration of the government.

Space research programme in Varsities

The Indian Space Research Organisation has an on-going programme to support space research activities in universities, academic institutions and research organisations. The objective is to encourage quality research in the fields relevant to the country's space programme. A number of projects in the area of remote sensing have been financed by the organisation which include studies of photo imagery or multiagency remote sensing experiments, design and development of a colour scanner and application of remote sensing for evaluation of natural resources.

Nagarjuna Varsity convocation

Delivering the second convocation address at the Nagarjuna University recently, Prof. V. Ramalingaswami, Director General of Indian Council of Medical Research advised the students to cultivate the habit of working hard. He stressed the need for adoption of innovative measures to make the country healthy and a happy nation in Asia where the problems of population growth and malnutrition were yet to be solved. Research and technology had not been properly utilised during the past years to eradicate malaria and other diseases. Prof. Ramalingaswami said scientific re-

search would help promote therapeutic and pharmaceutical systems in the country.

Prof. V. Baliah, Vice-Chancellor of the University outlined the new courses introduced by the university which included environmental biology, business administration, solar energy, creative writing in English. He awarded degrees to 1400 students and gold medals to research scholars and merit students.

Cochin Varsity introduces new courses

The School of Continuing Education of the University of Cochin has introduced the graduate level correspondence courses in banking and commerce and general laws and a diploma course in banking from the current academic session. The details of the courses can be obtained from the School of Continuing Education, University of Cochin, Cochin.

ISM research programme on coal beneficiation

The Mineral Engineering Division of Indian School of Mines, Dhanbad has prepared a research project to develop a suitable process beneficiation of inferior grade coals for the benefit of coal-preparation industry in the country. The scheme will study the effects of physical variables with the help of a mathematical model and optimum conditions for the process will be defined to make it possible for the industry to use the process with advantage. The project on Optimization of Process variable in Oil Agglomeration Process will be an inter-institutional effort carried out jointly by the School and the Central Fuel Research Institute, Jealgora. The Mineral Engineering Division of the School has also completed a number of consultancy and active research programmes sponsored by various agencies.

Fellowships for study in Germany

A group of twenty-five fellowship holders who are teachers and staff members of universities, CSIR laboratories and other institutes of university standard

left the country recently for their advanced studies in Federal Republic of Germany. The German Academic Exchange Service had offered ten fellowships each to the Ministry of Education & Social Welfare, University Grants Commission and Council of Scientific & Industrial Research in the fields of engineering & technology, agricultural forestry, veterinary science & animal husbandry, natural science and German language.

Guidelines to Varsities on NAEP

The University Grants Commission has suggested to universities to assume adult education and extension services programme as an important responsibility and give it the same status as teaching and research. The guidelines given by the Commission further suggest that these programmes should be made an integral part of the objectives and functions of university and college. The attempt should be to establish an organic link between adult education, extension programmes and university curricula. These activities should not be considered mainly as welfare activities for the deprived social groups but as a process of interaction with the society leading to valuable learning experience and as a means for making higher education relevant to the needs and oriented to the solution of existing problems. The Commission feels that without such an interaction on a continuing basis, the universities will remain isolated from society. The guidelines say that the objectives of the adult education and extension programme should be to make universities and colleges aware of their social responsibility, to bring them closer to the community, to educate the community and involve it meaningfully in national development and to give teachers and students opportunities for service leading to a learning experience. A continuous process of proper monitoring and evaluation has been recommended.

The Commission has set up a three-member expert committee

to expedite proposals received from universities for promoting adult education programmes.

Delhi Varsity plan on adult education

The Delhi University proposes to launch adult education programme in the slums and rural areas of the capital. The University has set up an adult and continuing education cell for the purpose. In addition to the literacy programmes, college teachers and interested individuals will participate in social awareness activities. The University also proposes to seek the assistance of Delhi Administration. The programme includes research on adult education and preparing material for illiterates and neo-literates. Effective monitoring and evaluation of the various programmes within the university system and experimental teaching centers to be manned by NCC cadets have been planned. Adult education centres will also be organised by various colleges and university departments in their neighbourhood. The academic resources of the university will be utilised in research-oriented programmes.

Urdu Board meet

The first meeting of the reconstituted Taraqqi-e-Urdu Board was held recently in New Delhi under the chairmanship of Shrimati Renuka Devi Barkataki, Minister of State for Education, Social Welfare and Culture. The members of the Board expressed satisfaction over the publication of 174 titles which included translation of school and university level textbooks, popular science books, children's literature and reference works. The Bureau for Promotion of Urdu has also produced a few books on adult education. The Board discussed measures to streamline the formation of subject panels and terminology committees and reviewed the progress made in the programmes for producing dictionaries and Urdu encyclopaedia. A coordination committee of all central organisations engaged in the production of Urdu books was suggested with a view to avoid duplication and achieving excellence in book production.

Seminar on agro-forestry

The seminar on Agro-forestry organised recently by the Indian Council of Agricultural Research in Imphal has suggested raising of large scale energy plantations on vast stretches of unused lands as an important measure to tackle the energy crisis. It was felt that the solution to the energy crises will lie in our reliance on renewable resources rather than fossil fuels which were exhaustible. Agro-forestry focus should be on utilising and obtaining the maximum potential yield of fuel, fodder, fibre and timber from lands not suited to agriculture. The experts have recommended development of technical skills to profitably afforest large bare lands available in the country. A Task Force has been set up to consider formulation and coordination of research programme in agro-forestry.

Students meet

Student unions of Lucknow University, Delhi University, Jamia Millia Islamia, Aligarh Muslim University and the Jawaharlal Nehru University have sponsored an all-India convention of secular students scheduled to be held in Delhi. The student leaders said in New Delhi that government should take steps to study the causes of unrest in universities. A special cell should be created by the central government to go into the problems of students. They said that the students wanted to move with the mainstream of the nation but certain forces were trying to divert them and break their unity.

Osmania Varsity leadership programme

Inaugurating the second refresher course in political science organised recently under the university leadership programme by the Department of Political Science of Osmania University, the State Education Secretary, Mr. B. Pratap Reddy emphasised the need for critical evaluation of education system to make it effective. College teachers from mofussil areas should be given preference in these programmes. He stressed the need for training

teachers and suggested that university teachers should evaluate the present syllabi thoroughly.

Prof. B. A. V. Sharma, Head of the Department of Political Science and Director of the programme welcomed the guests and said that a number of programmes had been undertaken by the Department to improve the standard of teaching at the undergraduate level. The university was the first in the country identified by the University Grants Commission to start the leadership programmes.

Sports facilities at Varsities

The All India Council of Sports at its recent meeting held in Pune has recommended a comprehensive sports policy for all round development of sports in the country. The Council President Field Marshal SHFJ Manekshaw said that the Council had finalised its recommendations to the government on sports policy and the document will now be sent to universities, sports organisations and others for a wider debate. The recommendations include creation of sports and physical education facilities for the masses.

The Council recommended to the government to provide an outlay of Rs. 245 crores during the sixth plan period for creation of minimum physical facilities in universities and colleges in the country. A sub-committee of the Council headed by Shri Kanti Chaudhary, Vice-Chancellor of the Jabalpur University had suggested this provision to meet the minimum requirements of universities and colleges for purchase of equipment, development of playing fields and setting up swimming pools. The Council President said that it was envisaged to set up at every university at least two fields for cricket, hockey, football, basketball, four volleyball and six tennis courts, a multipurpose gymnasium and a 50-metre swimming pool. Similar facilities at college level have also been recommended. The Council has suggested payment of a non-recurring grant of Rs. 40,000/- to each university for provision of gymnastic equipment. The NS NIS Patiala will establish field stations at the universities to organise

coaching/training facilities in various games for the benefit of teachers.

Artisan training centre at JNTU

The NSS Unit of the College of Fine Arts and Architecture of Jawaharlal Nehru Technological University, Hyderabad, has set up an Artisan Training Centre to provide training and educate the youth in various skilled handicrafts as a part of their National Adult Education programme. Sri Hayagrivachari, State Minister for Technical Education who inaugurated the centre stressed the need for development of handicraft trade in India and advocated the necessity of starting such centres in other colleges. As a first step the centre will provide training to non-student youth for a period of one month in different trades. Trainees for the programme will be exclusively non-student youth preferably residents of slum areas. The trainees will acquire the desired ability in their trade during the course of their training. The attempt will be to inculcate confidence among them to start self-employment units.

Summer institute on education technology

The Department of Education of Panjab University organised recently a three-week All-India Summer Institute on Education Technology for College Teachers. Shri Jiwan Tewari, Director of

the Correspondence Courses at the university said at the inaugural session that some system of periodical survey, assessment and evaluation of existing day-to-day instructional programmes had to be developed in order to reshape our educational system. Educational technology was a development, application and evaluation of aids, techniques and systems to enhance the effectiveness of instruction to modify the behaviour of learners. Dr. J.N. Joshi, Chairman of the Department spoke on the relevance and significance of education technology.

About forty delegates from the various parts of the country participated in the Summer Institute.

Re-orientation of courses

The University Grants Commission has identified certain colleges in rural areas where the courses will be restructured on an experimental basis to make them relevant to the environment and needs of the region. The object is to link education with field work, practical experience and productivity. The Commission has felt an immediate need for combining academic courses with the applied component suited to the real problems and work experience situation faced in different regions especially in the rural areas of the country. This will imply a good deal of integration and reframing of courses at the degree level to give them practi-

Linkage with Environment

(Continued from page 359)

To my mind this linkage with the environment has implications that no University can avoid for long: the alternative is total isolation. This association with the learning environment in which the poorer human beings live will at least establish some of the credibility that the Universities have lost because of their preoccupations with irrelevant and trivial issues when compared to the colossal problems outside their forewalls. Many Universities are very hesitant to take on additional responsibilities; they are heavy enough as it is. If the problems of the University cannot be tackled how on earth are they going to take on the problems of the rural areas and the rural poor? It is beyond their resources and limitations of time will prevent them from making any attempt. But I submit these are exaggerations. Given the inclination it is well within their powers and means to set up a sub-centre within reach of the University. By the American definition of an expert—an ordinary man from another town—there are many such experts in the Universities. The sort of technology we need in the villages is commonsense. Surely we can find such technologists in the Universities. □

cal and rural re-orientation. Students pursuing these courses will be able to go for post-graduate studies. The re-oriented courses will enable a student to apply his theoretical knowledge to the problems of the region through field work, project work, extension etc. The existing conventional courses will be integrated with concrete problems and related to the development of the region. The Commission has suggested an elaborate list of combination of subjects at the university and colleges level. The programme envisages close collaboration with agricultural universities and other rural institutions in the region in planning as well as running new courses. Assistance is proposed to be sought from Indian Council of Agricultural Research which has considerable experience in rural education and extension work in restructuring the courses particularly in subjects related to the field of agriculture and rural sciences.

Review of technical education programmes

A conference of the administrators of technical education institutions was held recently in Hyderabad under the presidency of Shri P. Sabanayagam, Union Education Secretary to review the steps taken to streamline technical education in the country. Shri Sabanayagam said that the working group set up by the Union Government in 1978 had recommended the need for redesigning the engineering courses and improving equipment and laboratory facilities in teaching institutions. It had emphasised the need for making a survey of manpower requirements in the matter of technical personnel in the industry and in government departments and also ascertaining the nature of the technical education received by the present incumbents. The need for linking industry with technical education institutions to develop an interaction between them had been recommended.

The representatives of the various states who attended the

meeting agreed to assess the manpower need with regard to technical personnel. Information will be collected through educational institutions in cooperation with the industry in public and private sectors. The conference accepted the concept that engineering colleges should assist polytechnics in academic development. It was felt that there should be constant monitoring of the academic content of technical education and also a periodical evaluation of the performance of such institutions.

Shri Sabanayagam said the central government had decided to provide funds for technical teachers development and training programmes, running of short-term refresher courses and for strengthening of library facilities.

Assistance for agricultural research & education

The United Nations Development Programme has approved supplementary assistance to the tune of \$ 10 lakhs for postgraduate agricultural research and education. The assistance is for the phased programme which was started in the country in October 1973. The programme aims at strengthening centres of postgraduate training and research in selective fields of agricultural science to enhance the competence of their staff and to create facilities for effective research. The funds will also be used for consultancy services, fellowships and equipment.

Short term courses at ISM

Under its executive development programme, the Indian School of Mines, Dhanbad, proposes to organise short term courses on (i) Planning Electrical Power Supply Systems for Mines; (ii) Coal Preparation; (iii) Metal Mining System; and (iv) Combustion Engineering during August this year. The School has already conducted ten courses during this year.

Between September and December 1979, the School proposes to conduct another twenty courses

some of which would be tailored to meet the specific needs of certain sponsoring organisations. These short-term courses would be in Advanced Mine Surveying, Deep Mining, Surface Mining, Geological and Geotechnical aspects of Mine Planning, Mine Environmental Engineering, Ceramic Engineering OR in Mining Engineering, Management of Industrial Relations, etc. In addition, the School proposes to organise a UGC sponsored course in Petroleum Exploration and Exploration and three seminars.

Further details can be had from the Professor of Continuing Education and Technical Secretary to the Director, Indian School of Mines, Dhanbad-826004.

Classified Advertisement

UNIVERSITY OF KERALA

TRIVANDRUM

No. Ad.D. II.2.2262/79

NOTIFICATION

Applications are invited from qualified candidates for appointment as Professor in Economics in the University Department of Economics, Kariavattom, Trivandrum in the scale of Rs. 1450-2050.

Appointments will be made in accordance with Section 6, sub section ii of Chapter II of the Kerala University Act of 1974. Accordingly the post is reserved for members of Ezhava Community. If no candidate from Ezhava Community is considered suitable, the post will be filled by suitable candidates from other reserved communities in accordance with rules relating to communal rotation. In the absence of suitable candidates from any of the reserved communities, applications from forward community candidates will be considered.

The details of qualifications, age, etc. and application forms can be had from the Deputy Registrar (Administration), University of Kerala, Trivandrum on production of a receipt for Rs. 2 (Rupees two only) from the State Bank of Travancore or crossed postal order drawn in favour of the Finance Officer, University of Kerala specifying the post for which application forms are required.

The last date fixed for the receipt of the applications is 16.7.1979.

C.K. Devassy
REGISTRAR (OFFTG)

A list of Doctoral Theses Accepted by Indian Universities

SOCIAL SCIENCES

Psychology

1. Sahu, Santilata. Psycholinguistic competence and language achievement of the socially disadvantaged at Primary School Level. Utkal University.

Sociology

1. Huda, M. Sibsagar town: A study in urbanisation. Dibrugarh University.
2. Mehra, Prem Lal. Agricultural development and social change in rural Punjab: A longitudinal study. Punjab Agricultural University.
3. Saxena, R.N. A study of the need, achievement and level of aspiration of rural youth. Kanpur University.

Economics

1. Kar, Gyana Chandra. Economics of high yielding variety: A study of an irrigated region of Cuttack District. Utkal University.
2. Lalita Kumari. Shikshit mahilaon mein berozgari ke samasya: Kanpur evam Delhi mein. Kanpur University.
3. Mathews, K.C. Materials management practices in major public sector undertakings in India. University of Cochin.
4. Saxena, Vinod Mohan. Economics of underdevelopment: A case study of U.P. Kanpur University.

Public Administration

1. Murali Manohar, K. Organisation and working of a municipality in Andhra Pradesh: A case study. Kakatiya University.

Education

1. Singh, S. Gyaneswar. Impact of modern education in Manipur: A case study of two Meitei villages. University of Gauhati.

Commerce

1. Dikshit, R.N. Investment structure of L.I.C. Utkal University.
2. Mishra, Nathuni. Price level changes and financial statements: A case study of selected Indian industries. University of Delhi.
3. Mishra, Pramod Kumar. Videshon mein Bharatiya sanyukt upkaram. University of Saugar.
4. Nema, Naresh Kumar. Madhya Pradesh mein upbhog sahkarita karyon evam upalabhdhiyon ka mulyankan. University of Saugar.
5. Rawat, Madan Singh. International commercial arbitration. University of Delhi.
6. Vishwakarma, Uttam Chandra. Panchvaheli Koyla kshetr ke shramik dashaon ka arthik sarvekshan. University of Saugar.

HUMANITIES

Philosophy

1. Gangadharan, S. Studies in Jnanamrtam. University of Madras.

Literature

English

1. Jagan Mohana Chari, A. Quest in W.H. Auden's poetry: Aesthetic, ethical and religious. Kakatiya University.
2. Kuiti, Chittaranjan. Image of India: A study of three British writers, viz. Flora, Annie Steel, 1847-1929, Fancies, William Bain, 1863-1940 and Leopold Hamilton Myers, 1881-1944, on India. University of Calcutta.
3. Naha, Kantibhusan. The Byronic heroine. University of Calcutta.

Sanskrit

1. Bhatt, Jagdish Prasad. Acharya Vishvanath ka natyashastriya vivechana: Ek samalochanatmak Adhyayan. Himachal Pradesh University.
2. Jain, Sudha. A study of Naishkarmya siddhi of Suresvaracharya. University of Delhi.
3. Lal, Gita. Mahakavi Kalidas ka shabd bhandar:

Meghdut tatha Kumar Sambhav, kewal pratham 8 sarg ke paripreksh mein. Kanpur University.

4. Mishra, Chittaranjan. A critical and comparative study of the works of Mahakavis Bharavi and Magha. University of Bihar.

5. Sarma, Pannala Radha Krishna. Characterisation of Sri Rama in the Valmiki Ramayana and in the Sanskrit plays based on it. Andhra University.

6. Singh, Baij Nath. Shriram Panivad krit Radhvyam Mahakavya ka sahityik addhyayan. Kanpur University.

Hindi

1. Bhalla, Vinoo. Swatantryottar Hindi upanyason mein astitvavad. University of Delhi.

2. Dhanoriya, Narsingh. Chindwada Zile ke Adivasi lok sahitya ka anusheelan. University of Saugar.

3. Gautam, Ramesh Kumar. Hindi ke prateek natak. University of Delhi.

4. Joshi Daya Krishna: Dinkar kee Urvashi ka smagr adhyayan. Kumaun University.

5. Kamini, Datia zile ke gram-namon ka bhasha vaigyanik adhyayan. Jiwaji University.

6. Kapoor, Om Prakash. Hindi aur Urdu kee nai kahanian. University of Delhi.

7. Mishra, Mani Ram. Vidyapati Padavati ka kavyashastriya adhyayan. Kanpur University.

8. Mishra, Urbeesh Chandra. Shelesh Matyanli: Vyaktitv aur krititv. Kumaun University.

9. Pal, Balkaran. Hindi ke Marxvadi upanyas: Upanyas kala ke nikash per, 1936-1970. University of Indore.

10. Pandey, K.L. Orchha Rajya ke kavi krishan aur unka sahitya. Kanpur University.

11. Pant, Ramesh Chander. Kumayuni lok sahitya mein prem ka swarup. Kumaun University.

12. Saxena, Nandini. Hindi ke abhiney natak: Ek rangmanchiya adhyayan. S.N.D.T. Women's University, Bombay.

13. Tiwari, Bhagwandas. Ritikaleen Hindi Vir kavya ke sandarbh mein Bhushan ka vishesh adhyayan. University of Saugar.

Marathi

1. Shiralkar, Usha G. Image of Shivaji in Marathi novel: 1870 to 1970 A.D. S.N.D.T. Women's University, Bombay.

2. Soman, Anjali A. Marathi Short stories written by women, 1885 to 1975. S.N.D.T. Women's University, Bombay.

Bengali

1. Bakshi, Amiya. Bebhutibhushaner upanyase prakriti chetana-o-jibanbodh. University of Calcutta.

2. Chakraborty, Barun Kumar. Bangla Sahitye toder Rajasthan granther preerana. Rabindra Bharati University.

3. Maitra, Jnanes Chandra. Narijagriti-o-Bangla Sahitya. University of Calcutta.

Oriya

1. Nayak, Bhagirathy. Oriya chitra kavya. Utkal University.

Tamil

1. Sundramathy, L. Gloria. Evaluation and evolution of Sangam literature. University of Kerala.

Telugu

1. Sankaraiah, Jandhyala. A critique on Satavadhani Veluri Siva Rama Sastri. Andhra University.

Malayalam

1. Kanakamma, K.V. Message poems in Tamil and Malayalam. Madurai Kamaraj University.

History

1. Cherian, John. Presidency of Ramon Mogsaysay, 1953-1957. Jawaharlal Nehru University.

2. Kala, Jayantika. Epic scenes in Ancient Indian plastic art. University of Saugar.

3. Mitra, Sudhankumar. Activities of the Protestant Missionaries in the Presidency of Madras, 1793-1833. University of Calcutta.

4. Singh, Awadhesh Kumar. Role of Shahabad in the freedom movement of India. Magadh University.

A list of select articles culled from Periodicals received in AIU library during June, 1979

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PANJAB UNIVERSITY CHANDIGARH

Advertisement No. 11/79

Applications are invited for the following posts so as to reach the Registrar, Panjab University, Chandigarh, alongwith the postal order for Rs. 10/- by 21st July 1979. Fourteen days extra time is permissible to the persons who have to submit their applications from abroad.

POSTS, SCALE OF PAY AND QUALIFICATIONS

1. Professors (Rs. 1500-60-1800-100-2000-125/2-2500)

(Economics-2, Physical Education-1, Public Administration-1, Sociology-1 (Under UGC Special Assistance Programme).

QUALIFICATIONS

Essential

- a) A first or high second class Master's degree of an Indian University or an equivalent qualification of a foreign University in the subject with bright academic record;
- b) Either a research degree of doctoral standard or published research work of high standard in journals of repute;
- c) About 10 years experience of teaching post-graduate classes and/or research; and
- d) Experience of guiding research at Doctoral level.

OR

An outstanding Scholar with established reputation who has made significant contribution to knowledge in the discipline concerned.

Note: FOR PROFESSOR OF PUBLIC ADMINISTRATION

Candidates in Allied fields could also apply.

Desirable

Professor of Sociology

Specialisation in Population studies and/or Urban Sociology.

Professor of Economics

Specialisation in Econometrics and Mathematical Economics for one of the posts.

2. Readers (Rs. 1200-50-1300-60-1900)
(Indian Theatre-1, Ancient Indian History, Culture & Archaeology-1 (Temporary but likely to be permanent), English-2, (Permanent-1 (Linguistics), Temporary-1), Economics-2, French-1, German-1, Hindi-1, History-1 (Middle Eastern Studies), Philosophy-1, Punjabi-1, Sanskrit-2, Sociology-1, Tamil-1 (South Indian Languages Department), Sanskrit-1 (V.V.B.I.S. & I.S., Hoshiarpur), Political Science-1 (Temporary but likely to be permanent).

QUALIFICATIONS

Essential

- a) A first or high second class Master's degree of an Indian University or an equivalent qualifications of a foreign University in the relevant subject with bright academic career

- b) Either a research degree of doctoral standard or published research work of high standard in the subject concerned in journals of repute.

- c) About five years' experience of teaching post-graduate classes and/or research; and

- d) Competence to guide research.

Evidence of being engaged in making innovation in teaching methods and production of standard teaching material, will be an additional qualification.

Reader in Indian Theatre

Essential

1. A first or high second class Master's degree (in any subject) of an Indian University or an equivalent qualification of a foreign University.
2. Experience of (a) acting, or (b) directing, or (c) producing, or (d) play-writing.

Desirable

- i) A research degree (any subject) of a doctoral standard or published research work of high standard in journals of repute.
- ii) About five years' experience of teaching post-graduate classes at a University or college level and experience of guiding research.
- iii) Graduate of the National School of Drama, New Delhi, or Diploma holder in the Indian Theatre from any of the recognised and well-known University.
- iv) Sound background in the Indian classical and Folk Theatrical Traditions and research in a field of Indian Theatre.
- v) Production/Participation in Radio/T.V. Plays.

Reader in Linguistics: (Deptt. of English)

Ph.D. in Linguistics in the field of English Language and Literature or Ph.D. in English Literature with special qualifications in English Linguistics from a recognised University.

Should have the ability to produce teaching material for Language Laboratory, devise courses for specialised purposes and be conversant with the methodology of teaching English as second Language.

Reader in Economics

Strong background in Mathematics and Statistics. Specialisation in Econometrics, Mathematical Economics and/or in any important area of Economic Theory.

Reader in Hindi

- a) Medieval Poetry.
- b) Poetics/Linguistics/Modern Literature.
- c) Knowledge of Sanskrit or English.

Reader in Philosophy

Specialisation in Indian Philosophy or Logic.

Reader in Punjabi

- a) May have lived and worked in West Punjab (Pakistan) in some Educational Institutions.
- b) Has done some written work in

the language of the area on different aspects to the language/Literature/Culture of the Area.

- c) Has working knowledge about the development of Society and Culture and also contemporary development in the concerned region,
- d) Capability of making depth study on inter-disciplinary basis.

Reader in Sociology

Specialisation in one or more of the following fields:

Social Stratification, Social Demography and quantitative methods in Sociology.

Reader in Tamil

- a) Minimum of 7 years teaching experience upto Diploma level to non-Tamils through English.
- b) Innovation in the method of teaching Tamil to non-Tamils.
- c) Sound knowledge of Tamil Grammar.
- d) Diploma in a Foreign language and knowledge of Hindi/Punjabi.

Reader in Sanskrit (V.V.B.I.S. & I.S. Hoshiarpur)

- a) Specialisation in Indian Epigraphy.
- b) Either a research degree of doctoral standard in Sanskrit/Ancient Indian History/Epigraphy or equivalent research publications of high standard.

Reader in Political Science

Specialisation: Either in International Politics or Political Theory or Comparative Politics or Indian Political System.

3. Lecturers (Rs. 700-40-1100-50-1600)

(Commerce & Business Management-3 (Permanent-1, Temporary-2), Economics-2, German-1, Gandian Studies-1, Hindi-1, History of Art-1 (Fine Arts Department), History-3, Philosophy-1 (Temporary but likely to be permanent), Psychology-2, Financial Management-1; Labour Administration-1 (Department of Public Administration), Sociology-1, Kannada-1 (Deptt. of South Indian Languages), Law-1 (Temporary), Sanskrit (Research)-5 (V.V.B.I.S. & I.S., Hoshiarpur), Mass Communications-2 (Permanent-1, Temporary-1), Political Science-1 (University Evening College).

QUALIFICATIONS

Essential

- a) A Doctor's degree or research work of an equally high standard; and
- b) Consistently good academic record with 1st or high second class i.e. 55% marks or more (B in the seven point scale). Master's degree in a relevant subject or an equivalent degree of a foreign University. Having regard to the need for developing inter disciplinary programmes, a degree in (a) and (b) above may be in relevant subject. The consistently good academic record at Pre-Master's level would be interpreted as an average of 50% or above at the two examinations prior to Master's examination.

Provided that if the selection committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of a very high standard, it may relax any of the qualifications prescribed in (b) above.

Provided further that if a candidate possessing a doctor's degree or equivalent research work is not available or is not considered suitable a person possessing a consistently good academic record (weightage being given to M.Phil or equivalent degree or research work of quality) may be appointed provided he has done research work for atleast two years or has practical experience in a research Laboratory/Organisation on the condition that he will have to obtain a Doctor's degree or give evidence of research work of equivalent high standard within five years of his appointment, failing which he will not be able to earn future increments until he fulfils these requirements.

Desirable

Lecturers in Commerce and Business Management

- i) M.B.A. with specialisation in Agricultural Management or M.A. Economics preferably with B.Sc. (Agriculture) or M.Sc. Agriculture with Diploma in Management or Agriculture and Co-operative or M.A. in Sociology/Public Administration/Economics/Geography with specialisation in Rural Development.

OR

- ii) Graduate or Post-graduate degree in Mechanical/Production Engineering with post-graduate qualifications in Business Administration/Industrial Management/Production Planning and Control;

OR

- iii) Post-graduate degree in Personnel Management and Industrial Relations or MBA with Specialisation in Personnel Management/Personnel Psychology/Industrial Relations or Post-graduate degree in Psychology with specialisation in Industrial Psychology.

OR

- iv) M.Com./M.B.A. with specialisation in Banking and Finance/Financial Management/Management of Financial Institutions/Investment Management or Bachelor's degree and Associate/Fellow of the Institute of Chartered Accountants of India or England/Institute of Company Secretaries with at least three year's experience in Public Limited Company.

Lecturer in Economics

Strong background of Mathematics. Specialisation in Macro Economic Theory/Statistics and Econometrics/Economics of Socialism/Economics of Population.

Lecturer in German

- i) Training in Audio-visual Aids in teaching German.
- ii) Teaching experience at the University level.

Lecturer in Gandhian Studies

Ability to teach Gandhian Thought.

Lecturer in History of Art

Persons having qualifications to teach the Art of China and Japan in the M.A. Courses in History of Art will be preferred.

Lecturer in Philosophy

Post-Graduate teaching experience.

Lecturer in Psychology

For post No. 1

Specialisation: Child Psychology (Rural)

For post No. 2

Specialisation in order of Priority:

- a) Clinical Psychology
- b) Personality
- c) Physiological Psychology.

Lecturer in Financial Management

M.A. in Public Administration or M.B.A. or M.Com. with specialisation in Financial Management.

Lecturer in Labour Administration

M.A. in Public Administration or M.S.W. with specialisation in Labour Welfare.

Lecturer in Sociology

Specialisation in one or more of the fields of marriage and family Social Change, Indian Society and Culture and Sociology of Medicine.

Lecturer in Kannada

Experience of teaching Kannada to non-Kannada people through English. Knowledge of Hindi/Punjabi.

Lecturers (Research) in Sanskrit

(V.V.B.I.S. & I.S. Hoshiarpur)

1. Specialisation in Vedic Language and Grammar as the field of study for the doctoral and Master's degree.
2. Five years' experience in collaborative Research or Lexicographical work.
3. Good knowledge of English and French, German or Avestan.

Lecturers (Department of Mass Communication)

QUALIFICATIONS

- i) Consistently good academic record with a first or high second class Master's degree in the subject (Communication/Mass Communication/Journalism etc.) from an Indian University or an equivalent qualification from a foreign University.

OR

- ii) A first or high second class Master's degree in Social Sciences/Sciences/Humanities with at least a second class Bachelor's degree or Diploma in Journalism from a recognised Indian University/Post-Graduate Diploma from a recognised Indian National Institute.

Desirable

- i) Teaching experience at college or University level.
- ii) Work experience in any area of Mass Communication (Newspaper/Magazine, News Agency, Public Relations, Advertising Radio or T.V. Journalism etc.)

Lecturer in Political Science

(P. U. EVENING COLLEGE)

QUALIFICATIONS

- i) A consistently good academic record with at least 1st or high second class i.e. 55% marks or more (B in the seven point scale) at the Master's degree in a relevant subject or an equivalent degree of a foreign University. The consistently good academic record of Pre-Master's level would be interpreted as an average of 50% or above at two examinations prior to Master's examination.
- ii) An M.Phil. degree or a recognised degree beyond the Master's level or published work indicating the capacity of a candidate for independent research work.

Provided that if the Selection Committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of a very high standard, it may relax any of the qualifications prescribed in (i) above.

Provided further that if a candidate possessing the qualifications as at (ii) above is not available or not considered suitable the University, on the recommendation of the Selection Committee may appoint a person possessing a consistently good academic record on the condition that he will have to obtain an M.Phil. degree or a recognised degree beyond the Master's level within five years of his appointment, failing which he will not be able to earn future increments till he obtains that degree or gives evidence of equivalent published work of high standard.

Candidates for the posts of Professors and Readers who do not possess a doctoral degree are required to submit 10 typed/cyclostyled copies of brief resume of their published work. 15% posts of Lecturers will be reserved for the members of the Scheduled Castes and 2% for the members of the Scheduled Tribes, but these will be filled up by others if no suitable Scheduled Castes/Scheduled Tribes applicant is available.

Persons already in service should route their applications through proper channel. Incomplete forms and those received after the due date will not be entertained. Serving employees, may, however, send their applications on the prescribed proforma, direct to the University. They may route another copy through their Departments. They will be allowed to present themselves for interview only on the production of a 'No Objection Certificate' from their employers. Canvassing in any form will disqualify the candidate.

Application forms can be obtained from the Cashier, Panjab University, Chandigarh, personally on payment of Rs. 2/- or by making a written request to the Finance & Development Officer, Panjab University, Chandigarh, accompanied by self-addressed stamped envelope of 23x10 cms and a postal order for Rs. 2/- drawn in favour of the Registrar, Panjab University, Chandigarh.

INDIAN INSTITUTE OF TECHNOLOGY

KHARAGPUR

Advertisement No. R/5/79

Applications are invited for the undermentioned posts at the Indian Institute of Technology, Kharagpur, West Bengal:

I. ASSISTANT PROFESSOR

Scale of Pay

Rs. 1200-50-1300-60-1900/- plus D.A. as admissible.

Age: Preferably between 30 and 45 years.

Qualifications Essential

- A good academic record with a Bachelor's Degree or Master's Degree in the appropriate branch and a Doctorate Degree.
- Seven years experience in the field of specialisation prescribed, of which at least 2 years should be in teaching and/or research.

Desirable

- Published research work of good standard.
- Experience in guiding research.

Vacancies

Mining Engineering—Three posts.

Specialisation in one or more of the following:-

- Mining Engineering, (b) Mining Technology, (c) Mine Environmental Engineering, (d) Mining Machinery, (e) Operation Research & Management, (f) Mine Planning.

Those who applied earlier for the same Post against this Institute's Advertisement No. R/1/79 (Contd.) need not apply again.

II. LECTURER

Scale of Pay

Rs. 700-40-1100-50-1600/- plus D.A. as admissible.

Age: Preferably between 25 and 38 years.

Qualifications: Essential

- A good academic record with a Master's Degree in the appropriate branch.
- Two years professional experience.

Desirable

A Doctorate Degree.

Vacancies

Naval Architecture : Two posts.

Specialisation in one or more of the following:

- Ship Design, (b) Shipbuilding Technology/Ship Hydro-mechanics/Ocean Engineering.

Note

- In all cases experience means experience gained after obtaining the Master's Degree.
- For the Mining Engineering and Naval Architecture Departments, if suitable candidates with prescribed essential qualifications are not available then the minimum educational requirements may be relaxed (1st class B. Tech. candidates would also be considered).
- Relaxation of the minimum educational requirements may also be done in the case of candidates having outstanding research achievements or long and meritorious industrial design experience.

III. ASSISTANT ENGINEER (MECHANICAL)

Scale of Pay

Rs. 650-30-740-35-810-EB-880-40-1000-EB-40-1200/- plus D.A. as admissible.

Age: Not less than 30 years.

Qualifications & Experiences: Essential

- A graduate in Mechanical Engineering or equivalent with a minimum total experience of 3 years of which at least 2 years of construction/maintenance and design experience.
- Experience in maintenance and operation of Refrigeration & Air-Condition Plant, Room Air Condition, Water Cooler.
- Experience in preventive maintenance of refrigeration and Automobiles.
- Experience of maintenance and servicing of Petrol and Diesel driven vehicles.

IV. ASSISTANT ENGINEER (CIVIL)

Scale of Pay

Rs. 650-30-740-35-810-EB-35-880-40-1000-EB-40-1200/- plus D.A. as admissible.

Age: Not less than 30 years.

Qualifications

A graduate in Civil Engineering with about 3 years of relevant experience or a diploma in Civil Engineering (Three years diploma—L.C.E.) with about 7 years relevant experience in large organisation/undertaking etc.

Job Requirements

- Able to prepare estimates, design and supervise civil construction works, including sanitary and water works and able to organise maintenance works.
- Able to handle departmental staff and organise water supply distribution, sewage disposal works and other municipal services including handling and maintenance of stores.
- Any other work as may be assigned by his superior in-charge or Director.

V. ASSISTANT ENGINEER (HORTICULTURE AND SANITATION) (Reserved for ST)

Scale of Pay

Rs. 650-30-740-35-810-EB-35-880-40-1000-EB-40-1200/- plus D.A. as admissible.

Qualifications

A graduate in Engineering preferably in Public Health Engineering or Agricultural Engineering or Civil Engineering with about 3 years of relevant experience or diploma (Three years diploma) in Public Health Engineering or Agricultural Engineering or Civil Engineering with about 7 years of relevant experience in a large organisation/undertaking etc.

Job Requirements

- Able to prepare estimates, design and supervise civil construction works in sanitary works and water works and able to organise and supervise municipal services like sewage systems, garbage clearance; water systems, mosquito control works, road maintenance and Horticultural works etc.

- Able to handle departmental staff and organise municipal services including handling and maintenance of stores.

- Any other work as may be assigned by his superior In-charge or Director.

Application form may be had from the Registrar on request along with an unstamped self-addressed envelope of size 23 cm × 10 cm. Application accompanied with an application fee (Non-refundable) of Rs. 7.50 (Rs. 1.87 for SC/ST candidates) payable by means of crossed Indian Postal Order to Indian Institute of Technology, Kharagpur at Kharagpur-721 302 (West Bengal) by the 11.7.79.

REGISTRAR

INDIAN INSTITUTE OF TECHNOLOGY : DELHI

Hauz Khas : New Delhi-110029

Advertisement No. 19/79

Applications are invited for appointment to various academic and other positions in the Indian Institute of Technology, Delhi:

CIVIL ENGINEERING DEPARTMENT

(Offshore Structures Research Cell.)

Lecturer Scale: 700-40-1100-50-1600

Qualifications

Good Master's degree in Structural Engineering/Hydrodynamics with two years research/industrial experience in any institution of university standard/establishment of repute. Doctorate degree or published work of equal standard would be preferred. Knowledge of computer programming will be an advantage.

2. CENTRE OF ENERGY STUDIES

Senior Scientific Officer GR.II: Scale-Rs. 700-40-900-EB-40-1100-50-1300.

Qualifications

Essential

1st Class B.Tech/M.Sc. Degree in Electronics/Computer/Electrical/Mechanical/Chemical Engineering or Physics. Preference will be given to candidates with higher academic qualifications.

Field of specialisation

- Gasification and Liquefaction of Coal.
- Real time problems on micromachines or microcomputer applications to power system. problems or fabrication of solid state electronic control circuits.
- Solar Energy Utilisation: Design and development of collectors/heat transfer/solar architecture/photovoltaic conversion/selective coatings/testing and evaluation of collectors/Absorption refrigeration Rankine cycle engines/thermal storage/electrical storage/solar tracking.
- Laser induced Fusion; Propagation of electro-magnetic waves in plasmas.
- M.H.D. Power Generation.
- Experience in any of the above fields with (i) proficiency in the use of computers particularly of (ECIL) Micro-78 OR (ii) Instrumentation.

3. CENTRE FOR APPLIED RESEARCH IN ELECTRONICS

Post : Design Engineer : Scale : Rs. 700-40-900-EB-40-1100-50-1300.

Good Bachelor's Degree in Electronic/Electrical Engineering with 2 years' experience in research/design/development/production/applications in Integrated circuits.

Field of Specialisation: Integrated circuit Technology and applications.

4. IIT SICK BAY

Matron Scale: Rs. 650-30-740-35-810-EB-35-880-40-1000-EB-40-1200 & facilities as laid down by the D.G.H.S. for matron.

Qualifications

Matriculate/equivalent, 'A' grade Nurse and Midwife, Nursing Administration Diploma or B.Sc. Nursing degree/M.Sc. (As laid down by DGHS).

Minimum experience ten years in a Govt. or recognised hospital in a responsible position.

Age 35 years relaxable in case of highly qualified or experienced and persons in Government service.

GENERAL

Prescribed application form may be obtained from the Superintendent (E-I), Indian Institute of Technology, Delhi, New Delhi-110029 either in person or by sending a self-addressed stamped envelope (10×23 cm) bearing postage stamps of 30p. Candidates from abroad may apply on plain paper giving an account of their academic and professional record, reprints and publications and names of at least two persons well acquainted with their professional work. Candidates selected for appointment will be required to join duty immediately or as soon as possible thereafter.

Reservation of posts exists for Scheduled Castes/Tribes candidates, as per Government of India rules, except for the excluded posts of Professor and Assistant Professor.

Last date of receipt of request for application form is 4.7.79.

Last date of receipt of completed application forms along with attested copies of certificates/testimonials etc. (10 copies of list of publications) together with a crossed Indian Postal Order for Rs. 7.50 (Rs. 1.87 for SC/ST candidates) for posts at Sl. No. 1 to 3 and Rs. 3/- (Rupee 0.75 for SC/ST candidates) for posts at Sl. No. 4 is 12-7-79 (22-7-79 for candidates from abroad).

Persons employed in Govt./Semi-Govt. Organisations/Autonomous Bodies should submit the applications through their employer.

MARATHWADA UNIVERSITY

UNIVERSITY CAMPUS
AURANGABAD 431 001
MAHARASHTRA

Advertisement No. Estt./Dept./34

Applications are invited for the following teaching posts:

(i) Readers

One each in Marathi, Econometrics/Mathematical Economics and Physics.

(ii) Lecturers

One each in English, Chinese, History, Zoology and Library Science.

For details of the advertisement and sets of application form please send Rs. 3/- to the Registrar, Marathwada University, Aurangabad-431 001, not later than July 21, 1979.

REGISTRAR

BIDHAN CHANDRA KRISHI VISWA VIDYALAYA

P.O. Mohan Pur, West Bengal
Advertisement No. APPTT/5/79

Applications in prescribed forms are invited for the following posts in the scales mentioned below plus other allowances as admissible under the rules of the Viswa Vidyalaya.

A. Professor of Agricultural Economics (One Post) in the Scale of Rs. 1500-60-1800-100-2000-125/2-2500.

Qualifications Essential

(i) A consistently good academic record with first or high second class (B+) Master's Degree in Agricultural Economics or any other qualification considered equivalent thereof (e.g. ASSOC. I.A.R.I.) following a good Bachelor's Degree in Agriculture.

OR

A consistently good academic record with first or high second class (B+) Master's Degree in Economics with specialisation in Agricultural Economics following a good honours degree in Economics.

(ii) A Doctoral Degree in relevant subject at (i) above;

(iii) At least 10 years' experience of teaching preferably at Post-Graduate level;

(iv) Capacity to conduct and guide research as evident from published papers;

(v) Demonstrated ability of leadership in the field of Research and significant contribution to the progress of Agricultural Economics.

B. Professor of Agricultural Engineering (One Post) in the Scale of Rs. 1500-60-1800-100-2000-125/2-2500.

Qualifications Essential

(i) A consistently good academic record with first or high second class (B+) Master's Degree or recognised equivalent qualification in Agricultural Engineering with specialisation in Agriculture/Mechanical/Civil/Soil and Water Engineering;

(ii) A Doctoral Degree in relevant subject at (i) above;

(iii) At least 10 year's experience of teaching preferably at Post-Graduate level;

(iv) Capacity to conduct and guide research as evident from published papers;

(v) Demonstrated ability of leadership in the field of research and significant contribution to the progress of Agriculture;

C. Professor of Dairy Technology (One Post) in the Scale of Rs. 1500-60-1800-100-2000-125/2-2500.

Qualifications Essential

(i) A consistently good academic

record with First or high second class (B+) Master's Degree in Dairy Technology following a B.Sc. (D.T.) Degree.

(ii) A Doctoral Degree in the relevant subject at (i) above;

(iii) 10 year's experience of teaching preferably at Post-Graduate level;

(iv) Capacity to conduct and guide research as evident from published papers;

(v) Demonstrated ability of leadership in the field of Research and significant contribution to the Progress of Dairy Science.

D. Reader in Dairy Technology (One Post) in the Scale of Rs. 1200-50-1300-60-1900.

Qualifications Essential

(i) A consistently good academic record with First or high second class (B+) Master's Degree in Dairy Technology following a B.Sc. (D.T.) Degree;

(ii) A Doctoral Degree in the relevant subject at (i) above;

(iii) Five year's experience of teaching preferably at Post-graduate level in Dairy Technology;

(iv) Capacity to conduct and guide research as evident from published papers in Dairy Technology.

E. Lecturer in the Department of Dairy Technology (One Post) in the Scale of Rs. 700-40-1100-50-1600.

Qualifications Essential

(i) A consistently good academic record with First or high second class (B+) Master's Degree in Dairy Technology following a Degree in Dairy Technology;

(ii) A Doctoral Degree in the relevant subject at (i) above or published work of an equally high standard;

(iii) At least two years' experience of teaching/research in Dairy Technology.

F. Lecturer in Book-Keeping and Accountancy (One Post) in the Scale of Rs. 700-40-1100-50-1600.

Qualifications Essential

(i) A consistently good academic record with First or high second class (B+) Master's Degree in Commerce following a honours degree in Commerce;

(ii) At least two years' experience in teaching/research in Book-Keeping and Accountancy at Post-Graduate level;

(iii) A Doctoral Degree in the relevant subject at (i) above or published work of an equally high standard.

G. Lecturer in the Department of Genetics and Plant Breeding (One Post) in the Scale of Rs. 700-40-1100-50-1600.

Qualification Essential

(i) A consistently good academic

record with First or high second class (B+) Master's

Degree in Genetics and Plant Breeding following a good degree in Agriculture:

- (ii) A Doctoral Degree in the relevant subject at (i) above or published work of equally high standard;
- (iii) At least 2 years' experience of teaching/Research in Plant Breeding;

H. Lecturer in the Department of Agricultural Chemistry and Soil Science (One Post) in the Scale of Rs. 700-40-1100-50-1600.

Qualification Essential

- (i) A consistently good academic record with First or high second class (B+) Master's Degree in Agricultural Chemistry and Soil Science following a good Honours Degree in B.Sc./B.Sc. (Ag.);
- (ii) A Doctoral Degree in the relevant subject at (i) above or published work of equally high standard;
- (iii) At least 2 years' experience of teaching/research in the field of Physical Chemistry, Physical Chemistry of Soils/Soil Physics.

I. Lecturer in the Department of Agricultural Statistics (One Post) in the Scale of Rs. 700-40-1100-50-1600.

Qualification Essential

- (i) A consistently good academic record with first or high second class (B+) Master's Degree in Agricultural Statistics/Statistics following a good Honours Degree in B.Sc./B.Sc. (Ag).
- (ii) A Doctoral Degree in the relevant subject at (i) above or published work of an equally high standard;
- (iii) At least 2 years' experience of teaching/research.

J. Lecturer in the Department of Agricultural Extension (Two Posts—One Temporary Against a Lien Vacancy) in the Scale of Rs. 700-40-1100-50-1600.

Qualification Essential

- (i) A consistently good academic record with first or high second class (B+) Master's Degree in Agricultural Extension following a good Honours Degree in Agriculture.
- (ii) A Doctoral Degree in the relevant subject at (i) above or published work of an equally high standard;
- (iii) At least 2 years experience of teaching/research.

K. Research Officer (Two Posts—Temporary under Scheme) in the Scale of Rs. 1200-50-1300-60-1900.

Qualification Essential

- (i) A consistently good academic record with first or high second class (B+) Master's Degree in Microbiology Or in Agricultural Chemistry and Soil Science/ Botany / Biochemistry, with specialisation in Microbiology,

Preference will be given to the Agriculture Graduates;

- (ii) A Doctoral Degree in the relevant subject at (i) above;
- (iii) At least five years' experience of research in the concerned field.

Desirable

- (i) Experience in Tissue Culture.
- (ii) Experience of teaching Microbiology in the Post-Graduate courses.

L. Subject Matter Specialist (Two Temporary Posts under Schemes) in the Scale of Rs. 700-40-1100-50-1600.

For 1st Post Qualification Essential

- (i) A consistently good academic record with first or high second class (B+) Master's Degree in Agronomy or recognised equivalent qualifications following a good degree in Agriculture;
- (ii) A Doctoral Degree in the relevant subject at (i) above or published work of an equally high standard;
- (iii) At least 2 years' experience of field research as evidenced by published work on Crop Production;
- (iv) Experience of demonstration work on Farmers Field.

Desirable

- (i) Knowledge of Modern Methods of investigation in Agronomy;
- (ii) Knowledge of Extension Methods.

For 2nd Post Qualification Essential

- (i) A consistently good academic record with first or high second class (B+) Master's Degree in Agril. Chemistry and Soil Science with specialisation in Soil Fertility or recognised equivalent qualifications following a good degree in Agriculture;
- (ii) At least 2 years' research experience on Soil Fertility as evidenced by published papers;
- (iii) Experience of Soil and Plant Analysis and knowledge of Soil tests diagnostic technique their interpretation and correct fertiliser use;
- (iv) A Doctoral Degree in the relevant subject at (i) above or published work of an equally high standard.

Desirable

- (i) Knowledge of practical methods of Soil and Water Management and their application to the field of problems;
- (ii) Knowledge of Agronomy techniques for maximising efficiency of various inputs.

M. Farm Manager (Two Posts) in the Scale of Rs. 600-35-670-40-870-45-1050-50-1250-(revised).

Qualification Essential

- (i) A good honours degree in Agriculture;
- (ii) At least three years' experience of Management of a sizeable Agricultural Farms.

Desirable

- (i) M.Sc. (Ag.) degree or recognised equivalent qualification.

N. Junior Extension Journalist (One Post) in the Scale of Rs. 325-15-475-EB-20-575-(Unrevised—under revision)

Qualification Essential

Post-graduate Diploma in Journalism. Preference will be given to those candidates who have diploma in Agriculture/Veterinary from recognised Institution.

*Those who have applied in response to the Advertisement No. APPTT/3/77 for the post of Extension Journalist need not apply again and their applications will be considered.

O. Supervisor (One Post—temporary under the Scheme 'Economics of Raising Cattle and Buffaloes in rural areas) in the Scale of Rs. 200-15-230-20-490-25-540 (Unrevised-under revision).

Qualification Essential

Degree in Agriculture/Animal/Husbandry/Dairying/Science.

P. Technical Assistant Grade III (3 posts temporary likely to be permanent) for Basic Science and Humanities in the Scale of Rs. 450-25-625-30-805-35-910-45-1000-(revised).

Qualification Essential

A degree in Science with Honours in Chemistry/Botany/Zoology.

Desirable

Some experience in a laboratory preferably in an educational/Institutional.

*Those who have applied earlier in response to advertisement No. APPTT/2/79 need not apply again their cases will be considered.

Age

- (i) For posts at 'A', 'B' and 'C'—Preferably below 50 years.
- (ii) For posts at 'D' and 'K'—Preferably below 45 years.
- (iii) For posts at 'E' to 'J' and 'L'—Preferably below 40 years.
- (iv) For posts at 'M', 'O' and 'P'—below 30 years.
- (v) For post at 'N'—below 35 years.

Experience and age limit may be relaxable on the recommendations of the Selection Committee in the case of candidates otherwise qualified. A high initial pay in the scale may be granted on the basis of qualifications, experience and present emoluments.

Application must be submitted in the prescribed form obtainable from the Office of the REGISTRAR, BIDHAN CHANDRA KRISHI VISWA VIDYALAYA P.O. MOHANPUR, DIST. NADIA, WEST BENGAL ON PAYMENT OF Rs. 8.00 (EIGHT) FOR posts at 'A' to 'N' AND Rs. 3.00 (THREE) for posts at 'O' & 'P' ONLY BY CROSSED INDIAN POSTAL ORDER in favour of the BIDHAN CHANDRA KRISHI VISWA VIDYALAYA personally OR by sending A SELF ADDRESSED ENVELOPE STAMPED 0.50 (FIFTY PAISE) only AND THE NECESSARY POSTAL ORDER. Forms will be available from the Office of the Registrar between 11.00 a.m. and 4.00 p.m.

on week days and 11.00 a.m. and 1.00 p.m. on Saturdays.

Persons already in employment should apply through proper channel.

Candidates **ABROAD** may also apply on plain paper with necessary Postal Order.

Applications completed in all respects should be submitted to the Office of the undersigned in an envelope superscribed with the name of the post applied for by the 20th July 1979.

Candidates called for interview will have to appear at their own expenses.

CORRIGENDUM

In respect of Advertisement No. APPTT/1/79 for post at 'A'-Essential qualification in (ii) should read as (ii) A doctoral degree in the relevant subject instead of (ii) A doctoral degree in relevant subject or research contribution of equal merit. Others will remain unchanged.

In respect of Advertisement No. APPTT/3/79 for post at 'D' Essential qualifications at (a).....following a degree in M.V.Sc. and A.H./B.Sc. (Ag). should read as.....following a degree in B.V.Sc. & A.H./B.Sc. (Ag). Others will remain unchanged.

A.K. Mitra
REGISTRAR (Actg)

INDIAN INSTITUTE OF TECHNOLOGY KHARAGPUR

Advertisement No. R/7/Centre/Scheme

Applications are invited for the undermentioned posts in the different Centres/Sponsored Research Schemes at the Indian Institute of Technology, Kharagpur, West Bengal. All posts are on contract for the duration mentioned. The contracts are renewable if the Schemes are continued.

A. POST HARVEST TECHNOLOGY CENTRE

I. Post : Chief Design Engineer— One Post

Scale of Pay
Rs. 1500-60-1800-100-2000/- plus D.A. as admissible.

Duration
3 years in the first instance.

Qualifications & Experiences
Essential

- i) A good academic record with Bachelor's Degree or Master's Degree in Agricultural Engineering with specialisation in Crop Process Engineering and Ph.D. in Agricultural Engineering.
- ii) Ten years experience in the field of Crop Process Engineering of which at least 5 years should be in teaching and/or research.
- iii) Published research work of good quality in Journals of repute.
- iv) Experience in guiding/conducting research.

Desirable

- i) Experience of teaching post-graduate classes.
- ii) Good design and/or testing experience.

II. Post : Senior Project Officer— One Post

Scale of Pay
Rs. 1100-50-1600/- plus D.A. as admissible.

Duration: 3 years in the first instance.

Qualifications & Experiences
Essential

- i) A good academic record with Master's Degree in Agricultural Engineering and Ph.D. in Agricultural Engineering.
- ii) Seven years experience in the field of Crop Process Engineering of which atleast two years should be in teaching and/or research.

Desirable

- i) Experience in guiding research.
- ii) Published research work of good standard.
- iii) Aptitude for doing transfer of technology work with the farmers and rice millers.

III. Post: Junior Project Officer—One Post

Scale of Pay
Rs. 700-40-1100-50-1300/- plus D.A. as admissible.

Duration
3 years in the first instance.

Qualifications & Experiences
Essential

- i) A good academic record with Master's Degree in Agricultural Engineering preferably with specialisation in Crop Process Engineering.
- ii) Aptitude for doing extension work with farmers and rice millers.
- iii) 2 years experience in appropriate discipline.

IV. Post: Junior Research Engineer— One Post

Scale of Pay
Rs. 700-40-900-EB-40-1100-50-1300/- plus D.A. as admissible.

Duration
3 years in the first instance.

Qualifications & Experiences
Essential

- i) A good academic record with Master's Degree in Agricultural Engineering preferably with specialisation in Crop Process Engineering.

Desirable

- i) Aptitude to do extension work in rural areas.
- ii) Two years professional experience in appropriate discipline.

CENTRE: RADAR AND COMMUNICATION

I. Post: Administrative Officer—One Post—Reserved for SC/ST candidate.

Scale of Pay
Rs. 700-40-900-EB-40-1100-50-1300/- plus D.A. as admissible.

Qualifications & Experiences
Essential

- i) Good degree in Arts, Science, Commerce or Business Management.
- ii) Must have good knowledge of procedure of:
 - a) General Office Administration and Management.
 - b) Administration of Financial matters such as Budget, Accounts, Rules and Regulations relating to expenditure and
 - c) Purchasing engineering stores including import thereof.
- iii) At least 10 years experience in a responsible position in Accounts/Purchase / Administration under Government in a large Educational

Institution or Business Organisation of repute.

Desirable

Ability to draft reports and minutes of conferences and draw up project reports and proposals from technical and other ancillary datas.

SCHEMES

I. Department: Agricultural Engineering

i) Schemes

- 1) Improvement of Soil Physical Conditions, ICAR
- 2) Water Management and Soil Salinity, ICAR

Post: Senior Scientist (Soil Physics)
2 posts (1 for each Scheme)

Scale of Pay

Rs. 1500-50-1600/- plus D.A. as admissible.

Duration: 5 years

Qualifications & Experiences

First class M.Sc. (Ag.) in Soil Science and Ph.D. degree in Soil Science with specialisation in Soil Physics. Ability to conduct and Supervise research.

ii. Scheme

Water Use and Management, Ford Foundation.

Post: Senior Scientific Officer

3 posts (One each in 3 specialisation)

Scale of Pay

Rs. 1100-50-1600/- plus D.A. as admissible.

Duration: 5 years.

Qualifications & Experiences

First class Master's degree and a doctorate degree in the field of specialisations of (i) Agricultural Engineering (Soil and Water Management), (ii) Agricultural Science (Agronomy), (iii) Economics/Agricultural Economics/Management as applied to Water Management. Ability to conduct and supervise research works.

II. Department: Aeronautical Engineering

Scheme : Studies on Remotely Controlled Flight Vehicles (A.R.D.B Scheme)

Posts: Junior Research Engineers—Two posts.

Scale of Pay

Rs. 700-40-900-EB-40-1100-50-1300/- plus D.A. as admissible.

Duration: 2 years.

Qualifications & Experiences

A good academic record with a Bachelor's degree in Aeronautical Engineering.

III. Department: Mining Engineering

Scheme: Spontaneous Combustion in Largescale Coal Stacks (D.S.T Scheme)

Posts : Junior Research Officers—Two posts.

Scale of Pay

Rs. 700-40-1100-50-1300/- plus D.A. as admissible.

Duration: 2 years.

Qualifications & Experiences

Essential

A good academic record with a Bachelor's degree in Mining Engineering or Chemical Engineering or M.Sc. in Chemistry.

IV. Department: Chemical Engineering Scheme

Scheme on Silicon extraction from rice husk (D.S.T Scheme)

Posts: Junior Research Engineer—One post.

Scale of Pay
Rs. 700-40-1100-50-1300/- plus D.A.
as admissible.

Duration: 2 years.

Qualifications & Experiences
Essential

A good academic record with a Bachelor's degree in Chemical Engineering or a good Master Degree in Chemical Engineering. Preference will be given to persons specialised in the field of Reaction Engineering.

V. Department: Electronic & Electrical Communication Engg.

i) Scheme

Pattern Recognition & Picture Processing (D.S.T. Scheme)

Posts: Senior Research Fellow 'A'—One post.

Scale of Pay

Rs. 900/- Consolidated (fixed)

Duration: 2 years.

Qualifications & Experiences
Essential

A good academic record with a Master's degree in Electronics. Preference will be given to persons specialised in the field of pattern recognition on digital circuits.

ii) Scheme

Digital Communication & related topics (ISRO Scheme)

Posts: Senior Research Fellow 'A'—One post.

Scale of Pay

Rs. 900/- Consolidated (fixed)

Duration: 2 years.

Qualifications & Experiences
Essential

A good academic record with a Master's degree in Electronics. Preference will be given to person specialised in the field of Digital Communication.

iii) Scheme

Integrated Circuit (IIT Scheme)

Posts: 1. Junior Scientific Officer—One post.

2. Junior Engineer—One post.

Scale of Pay

Rs. 700-40-1100-50-1300/- plus D.A.
as admissible.

Duration: 2 years.

Qualifications & Experiences
Essential

1. Junior Scientific Officer : M.E./M.Tech. in electronics or equivalent with one year's experience in semiconductor Electronics/Microelectronics/IC Technology.

2. B.E./B.Tech. or equivalent in Electronics with a minimum of three years' experience in semiconductor Electronics

OR

M.Sc. in Physics with specialisation in Electronics with a minimum of five years of experience in semiconductor Electronics.

Applications on Plain paper stating Name, Father's Name, Present and Permanent Address, Age, Qualifications and Experiences in details, Nationality etc. for the aforesaid post should reach the Heads of the Department concerned, Indian Institute of Technology, Kharagpur by the 14th July, 1979.

A. K. Sur
REGISTRAR

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, A.P.
HUMAYUN NAGAR, HYDERABAD-500 028
NOTIFICATION

Applications are invited for the following vacancies of teaching posts in the Constituent Colleges of the University.

Sl. No.	Post and Department	SC/ST	B.C.	General	Total	Scale of Pay
1.	Lecturer in Civil Engg.	1	1	3	5	700-40-1100-50-1600.
2.	Lecturer in Electrical Engg.	—	—	1	1	"
3.	Lecturer in Mechanical Engineering	1	1	1	3	"
4.	Lecturer in Electronics & Communication Engg.	2	2	5	9	"
5.	Lecturer in Metallurgy	—	—	1	1	"
6.	Lecturer in Architecture	1	1	1	3	750-45-1200-50-1300 @

Note: 1. All the posts carry D.A., H.R.A., C.C.A. etc. as per State Government Rules.

2. @ The UGC scales of pay Rs. 700-40-1100-50-1600 when approved by Government for the Architecture section of College of Fine Arts and Architecture will automatically be applicable to those selected.

Age limit: Lecturers not more than 30 years as on 1-7-79. The age limit can be relaxed in case of inservice candidates of JNT University.

For SC and ST candidates and BC candidates, the age limit is relaxable by 5 years.

Qualifications required

Lecturers: Posts S. Nos. 1 to 5. } A first class Master's Degree in the concerned subject with consistently good academic record.
Essential

Lecturer in Architecture Post S. No. 6 } 1st class Bachelor's Degree in Architecture. 1 year's professional and/or teaching experience.

Desirable

Master's Degree in Architecture.

Note: Candidates possessing Bachelor's degree will have to acquire Master's degree within 5 years from date of appointment.

Specialisations Required

Civil Engineering

1. Soil Mechanical & Foundation Engg.
2. Transportation Engineering.
3. Building Technology.
4. Structural Engineering/Survey and Photogeometry preferring Structural Engineering.

Electrical Engineering

Instrumentation or Real time control of power systems or power systems.

Electronics & Communication Engineering

Microwaves, Communication Systems, Advanced Electronics, Computer Hardware, Computer Engineering, Radar & Microwave Engineering, Solid State Devices and circuits, Active Network Synthesis, Digital Electronics.

Mechanical Engineering

Machine Design, Foundry, Instrumentation.

Metallurgy

Metallurgy or Material Science.

Note

2 posts in Civil Engineering, 1 post in Electrical Engineering and 2 posts in Mechanical Engineering are leave vacancies. Hence appointment to these posts would be made on temporary basis only, and are liable to be terminated on return of the staff members from leave.

Application forms can be had from the office of the Registrar, Jawaharlal Nehru Technological University, Hyderabad on payment of Rs. 5/- through crossed Indian Postal Order payable to Registrar, Jawaharlal Nehru Technological University, Hyderabad-28 at Jawaharlal Nehru Technological University Post Office. Requisition for the supply of application form may be made enclosing self-addressed envelope 30 x 10 cm size with stamps worth of Rs. 1-05 (Rupees one and five paise only) duly affixed. Duly filled in applications together with a crossed Indian Postal Order of Rs. 15/- (Rs. 3-00 in case of SC/ST candidates) payable to the Registrar, J N T University, Hyderabad at J N T U Post Office, Hyderabad-500028 should reach the Registrar on or before 31-7-1979. Applications received after the due date either in person or through post will be rejected. Application of candidates in employment should be sent through their employer. They may however send an advance copy which must be received in University Office on or before the due date.

Last date for issue of application forms is 24-7-1979.

Last date for receipt of filled in applications is 31-7-1979.

REGISTRAR

SAMBALPUR UNIVERSITY

JYOTI VIHAR:BURLA-768017

DIST:SAMBALPUR (Orissa)

Advertisement No. 12779 ESTT-II

Dated: 6.6.79

Applications in the prescribed form are invited for the following teaching posts in the University Post-Graduate Departments at Jyoti Vihar, Burla and in the University College of Engineering, Burla.

University P.G. Departments

1. Lecturer: Physics—One post (leave vacancy)
2. Reader: Chemistry—One Post
3. Professor: Mathematics—One post

University College of Engineering, Burla

4. Workshop Superintendent—One post

I. Scale of Pay

Lecturer—Rs. 700-40-1100-50-1600/-

Reader/Workshop Superintendent—

Rs. 1200-50-1300-60-1900/-

Professor — Rs. 1500-60-1800-100-2000-125/2-2500/-

All the posts carry dearness allowance and C.P.F.-cum-Gratuity benefits as determined by the University from time to time.

II. The age of retirement is sixty years.

III. QUALIFICATION

1. LECTURER

- (i) A consistently good academic record with first or high second class Master's Degree in the concerned subject or equivalent foreign Degree with grade B+ or 55% of marks, which may be relaxed in case of candidates holding a Ph.D. degree.
- (ii) A Doctorate Degree or published work of equivalent standard. In case a suitable candidate possessing a Doctorate Degree or equivalent published work is not available, a person possessing a consistently good academic record (due weightage being given to M.Phil. or equivalent degree or research work of quality) may be appointed on the condition that he will obtain a Doctorate Degree or produce evidence of published work of equivalent standard within five years of his appointment, failing which he will not be entitled to further increments until he fulfils this requirement.

2. READER

- (i) A consistently good academic record with first or high second class Master's degree in the concerned subject or equivalent foreign degree with Grade B+ or 55% marks which may be relaxed in the case of candidates otherwise found suitable.
- (ii) Good academic record with a Doctorate Degree or equivalent published work.
- (iii) Evidence of active participation in research.
- (iv) Eight years' experience of teaching and/or research out of which at least five years shall be as Lecturer in the University Department/College at Honours/P.G. level.

3. PROFESSOR

- (i) A consistently good academic record with first or high second class Master's degree in the concerned subject or equivalent foreign degree with Grade B+ or 55% marks which may be relaxed in the case of candidates otherwise found suitable.
- (ii) Good academic record with a Doctorate Degree or equivalent published work.
- (iii) An eminent scholar with published work of high quality and actively engaged in research.
- (iv) Minimum experience of ten years in teaching and/or research out of which at least five years must be in teaching at post-graduate level as a full time teacher.
- (v) Experience in guiding research at Doctoral level. A Professor may be appointed on contract basis for a specified period.

An outstanding scholar with established reputation who has made significant contribution to knowledge may be appointed as Professor by negotiation.

4. WORKSHOP SUPERINTENDENT

- (i) Second class Bachelor's degree in Mechanical Engineering with grade B+ or 55% marks.
- (ii) Master's degree in production/Industrial Engineering.

Experience

Total five years including teaching of production/Industrial Engineering/Workshop Technology at first degree level.

Desirable

At least two years' experience in a responsible capacity in Production, Estimation, Production Control and Personal Management.

IV. Specialisation required

Lecturer in Physics: Nuclear Physics/Solid State Physics

Reader in Chemistry: Preferably Physical Chemistry

Professor in Mathematics: Functional Analysis/Algebra/Topology / Differential Equation/Number Theory/Differential Geometry/Probability.

Seven copies of the application forms will be supplied from the University office to each candidate in person on cash payment of Rs. 10/- (Rupees ten) only. Candidates intending to receive forms by post are required to send (a) Crossed Postal Order of Rs 10/- payable to the "Finance Officer, Sambalpur University" (b) a self addressed envelope (23 cm x 10 cm) with postage stamps worth Rs 3.30 P. affixed to it with the words "APPLICATION FORM FOR TEACHING POSTS IN SAMBALPUR UNIVERSITY" superscribed on it. Money order/cheque will not be accepted.

The last date for receipt of applications in the office of the University is 14.7.79. The candidates will be required to appear for an interview before a Selection Committee at their own expense.

Issue of this advertisement does not

make it binding on the University to make the appointment.

All communications should be addressed to the Registrar by designation only.

REGISTRAR

SAURASHTRA UNIVERSITY

RAJKOT

Applications in the prescribed forms are invited for the undermentioned posts in the various Departments of this University. Application forms alongwith detailed requirements of qualifications and experience for these posts will be available from the Registrar, Saurashtra University, University Campus, Kalawad Road, Rajkot-360005 on sending a self-addressed envelope of the size 23x11 cms. with postage stamps worth Re. 1-20.

Applications (seven copies) accompanied by Indian Postal Order for Rs. 5/- crossed in favour of the Registrar, Saurashtra University, Rajkot should reach this office on or before 23-7-1979.

(1) Professor of Gujarati; (2) Professor of Economics with specialization in Business Management, Financial Management, Marketing Management or Personnel Management and/or allied subjects; (3) Professor of Sociology—The incumbent is required to develop Rural Sociology in Saurashtra; (4) Professor of Chemistry: Preferably Organic. Those specialised in Inorganic Chemistry may also apply. (5) Reader in Economics with specialization in Business Management, Financial Management, Marketing Management or Personnel Management and/or allied subjects; (6) Reader in Law (7) Reader in History (8) Lecturer in Economics: preferably in Quantitative Economics, Development Economics, Agricultural Economics and Rural Economics.

Pay Scales

- 1 Professor : Rs. 1500-60-1800-100-2000-125/2-2500
- 2 Reader : Rs. 1200-50-1300-60-1600 - assessment - 60-1900.
- 3 Lecturer : Rs. 700-40-1100-50-1300 - assessment-50-1600.

Reservation for Scheduled Castes/ Scheduled Tribes, Nomadic Tribes/ Denotified Tribes and Social and Educational Backward Classes will be 5%. Age ordinarily not exceeding 55 years. The posts are permanent and carry benefit of contributory Provident Fund as per University rules. Dearness Allowance and House Rent Allowance will be paid as per University rules. Higher initial salary in the scale may be considered in case of exceptionally qualified and experienced persons. Qualifications and experience may be relaxed in special cases. Candidates in employment must submit their applications through their present employer. Those knowing Gujarati and/or Hindi will be preferred.

V. M. Desai
REGISTRAR

JAWAHARLAL NEHRU UNIVERSITY

NEW DELHI-110067

Advt. No. Aca. III/18/79

Applications are invited for the following posts:

SCHOOL OF SOCIAL SCIENCES

Centre for the Historical Studies

1. Associate Professor / Fellow in Medieval Indian History:—One

Qualifications

Essential

- (a) Consistently good academic record with at least a high second class Master's Degree in History with Specialisation in Medieval Indian History or its equivalent qualification from an Indian/foreign University;
- (b) A doctor's degree or published work of an equally high standard in Medieval Indian History; and
- (c) About five years experience of teaching and/or research.

Area of Specialisation required

Eighteenth Century Indian History.

2. Assistant Professor in Medieval Indian History (Leave—One vacancy for two years).

Qualifications

- (a) Consistently good academic record with at least a high second class Master's degree in History with Specialisation in Medieval Indian History or its equivalent qualification from an Indian/foreign University; and
- (b) A Doctor's degree or published work of an equally high standard.

Area of Specialisation required

Medieval Indian Social and Economic History.

Some teaching or research experience.

3. Assistant Professor in Non-Indian History—One

Qualifications

Essential

- (a) Consistently good academic record with at least a high second class Master's degree in History with specialisation in non-Indian History or its equivalent qualification from an Indian/foreign University;
- (b) A Doctor's degree or published work of an equally high standard.

Area of Specialisation required

History of Nineteenth and early twentieth century Western Europe/China.

SCHOOL OF LANGUAGES

Centre of French Studies

4. Assistant Professor in French—One

Qualifications

Essential

- (a) Consistently good academic record with at least a high

second class Master's degree in French or its equivalent qualification from an Indian/foreign University;

- (b) A doctor's degree or published work of an equally high standard in French.

Desirable

Experience in teaching French by audio-visual method.

5. Assistant Professor in French (Leave vacancy—One)

Qualifications

Essential

- (a) Consistently good academic record with at least a high second class Master's degree in French or an equivalent qualification from an Indian/foreign University;
- (b) A doctor's degree or published work of an equally high standard in French.

Area of Specialisation required

French Literature.

Desirable

Some teaching and/or research experience in French.

Centre of African & Asian Languages

6. Assistant Professor in Chinese—One

Qualifications

Essential

- (a) Consistently good academic record with at least a high second class Master's degree in Chinese or its equivalent qualification from an Indian/Foreign University; and
- (b) A doctor's degree or published work of an equally high standard in Chinese.

Desirable

- (a) About two years' experience of teaching and/or research.
- (b) Training in a Chinese speaking area; and
- (c) Familiarity with latest language teaching techniques and the use of audio-visual aids.

Provided that in the case of posts of Assistant Professors if the Selection Committees are of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard, it may relax any of qualifications prescribed in (a) above.

Provided further that if a candidate possessing a Doctor's degree or equivalent research work is not available or is not considered suitable, a person possessing a consistently good academic record (weightage being given to M.Phil. or equivalent degree or research work of quality) may be appointed provided he/she has done research work for at least two years or has practical experience in a research laboratory/organisation on the condition that he will have to obtain a Doctor's degree or give evidence of research work of equivalent high standard within five years of his appointment, failing which

he will not be able to earn future increments until he fulfils these requirements.

SCALES OF PAY

Associate Professor/Fellow: Rs 1200-50-1300-60-1900.

Assistant Professor: Rs. 700-40-1100-50-1600.

(Plus usual allowances as admissible to the members of the staff in the Central Universities).

Relaxation in any of the qualifications may be made (a) in favour of persons of eminence or of high academic/professional distinction, and (b) in exceptional cases where adequately qualified persons are not available but are otherwise found suitable for the respective positions. It will also be open to the University to consider the names of suitable candidates who may not have applied.

The selected candidates will be expected to participate in the teaching and research programmes in the concerned disciplines in other Schools of the University as well as in the programmes offered in their own Centres of Studies.

Normally appointment of Fellows is made on contract basis for a period ranging from one to three years.

Benefits of C.P. Fund-Cum-Gratuity/G.P. Fund-cum-Pension-cum-Gratuity are available as per University rules.

Persons already in employment should route their applications through proper channel.

Due consideration will be given to candidates belonging to SC/ST at the level of Assistant Professor.

Second class (mail) rail fare (both ways) will be paid to candidates invited to appear for interview from outstation by the shortest route subject to the production of rail receipt.

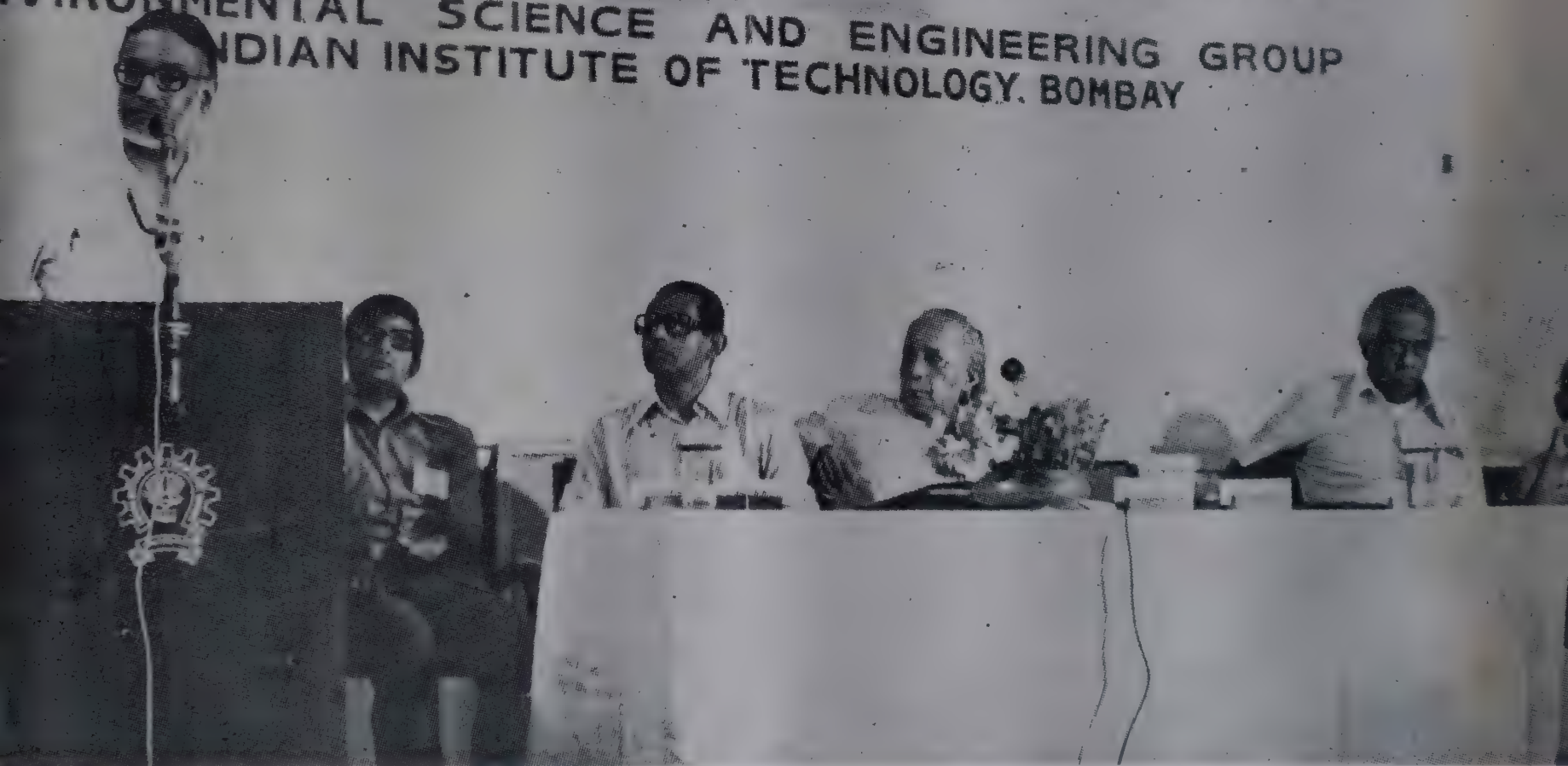
Applications, separate for each post, on the prescribed form, obtainable free of cost from the University by sending a self-addressed and stamped envelope of 23 cm x 10 cm, size to the Deputy Registrar (Academic), Jawaharlal Nehru University, New Mehrauli Road, New Delhi-110067, should reach him latest by 17.7.1979.

Candidates from abroad, applying for faculty positions, may apply on plain paper, (but their applications should reach the University by the last date) furnishing all the relevant informations such as their names, date and place of birth; marital status; nationality; state of domicile; postal and permanent addresses; father's name and address; academic and professional attainments; full details of (a) publications, and (b) research projects undertaken; language(s) known; details of visits to foreign countries; and the name and addresses of at least two persons well acquainted with the candidate's professional work who should also be requested by the candidate to forward to the Deputy Registrar (Academic) confidential report concerning the candidate.

University lews

A FORTNIGHTLY CHRONICLE OF HIGHER EDUCATION & RESEARCH JULY 15, 1979

WORLD ENVIRONMENT DAY CELEBRATIONS JUNE 5, 1979
CONFERENCE ON AIR AND WATER POLLUTION CONTROL
ENVIRONMENTAL SCIENCE AND ENGINEERING GROUP
INDIAN INSTITUTE OF TECHNOLOGY, BOMBAY



Prof. M.G.K. Menon, Secretary, Department of Science and Technology, Government of India, inaugurating the Conference on air and water pollution control at the Indian Institute of Technology, Bombay.

MAHARSHI DAYANAND UNIVERSITY ROHTAK

Invited applications (through proper channel) for:

TEACHING POSTS

Professor in: English

Readers in: Mathematics, History and Physics

Lecturers in: Sociology, History, Sanskrit and Law.

QUALIFICATIONS

- i) **Professor:** Very good academic record, Doctoral Degree, Experience of guiding research, 10 years teaching experience of post-graduate classes, about 5 years as Reader.
- ii) **Readers:** Very good academic record, Doctoral Degree, at least 5 years experience of teaching post-graduate classes.
- iii) **Lecturers:** Good academic record, Doctoral Degree or high standard research work.
- iv) **Lecturers in Law:** (a) Ph.D. or high second class LL.M. or any other foreign degree equivalent thereto (b) A candidate having teaching experience may be preferred.

SPECIALISATION

Professor in English: Modern English Literature.

Readers in Mathematics: For one post only: Applied Mathematics/Statistics.

Readers in History: For one post only: Modern Indian History.

Reader in Physics: Lasers/Spectroscopy/Solid State Physics / Mossbauer Spectroscopy / Electronics or Allied topics.

Lecturers in History: For one post: Modern Indian History and for other post Medieval Indian History. **Lecturers in Law:** For one post only: Labour Laws.

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Proof Reader: Rs. 225-15-360/20-500.

At least a Post-graduate degree with 5 years experience as Proof Reader in a University/Government office or a reputed concern. Knowledge of Hindi and English Essential.

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At least Matriculation with 7 years' experience of English and Hindi composing in a Press of repute.

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At least Middle. Knowledge of composing and distributing both English and Hindi. At least 3 years experience of composing and distributing in a press of repute.

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U.G.C. Pay Scales for all categories of teaching posts, with usual allowances and benefit of Contributory Provident Fund. Reservation for Ex-Servicemens B.C./S.C./S.T. candidates as per rule/and no application fee from them. Qualifications relaxable and higher start admissible in deserving cases. Knowledge of Hindi essential for all posts. Number of posts indeterminate but liable to be increased or decreased. Those who have already applied for the posts of Lecturers in Law in response to earlier advertisement need not apply again.

Applications with full bio-data attested testimonials and crossed postal order(s) for Rs. 5/- for posts carrying basic pay of less than Rs. 300/- and Rs. 10/- for posts carrying higher basic pay in favour of Chief Accounts Officer, payable at Post Office, Rohtak be sent to Registrar by 25-7-1979.

REGISTRAR

THE M.S. UNIVERSITY OF BARODA

DEPARTMENT OF HISTORY
FACULTY OF ARTS

Special Assistance Programme: 1979-80
Admission for M.A. History & National Scholarships: (Four)

Admission are open for students wishing to join M.A. in History. Applicants should have B.A. degree with History as one of the subjects. Preference will be given to those with Second division marks and with History as a Major subject.

Seats are limited and if more applications are received, those having higher qualifications alone may receive admission.

Four National Scholarships of the value of Rs. 250/- per month tenable for two years from the date of admission will be awarded on the basis of a written test held in the first week of August.

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Teacher Fellowships: Four

Four Teacher Fellowships available to full time teachers serving in Colleges and Universities are available initially for a period of two years, for research studies leading to the Ph.D. degree. As a rule salary protection is provided for those admitted under this category.

For further details and admission forms, apply immediately to the Dean, Faculty of Arts, Station Road, Baroda-390 002 with self-addressed envelope of 00-30 n.p.

M.A. admission may close by the third week of July, other may continue till such dates as may be specified later.

S. C. Misra
HEAD

Department of History

INDIAN INSTITUTE OF TECHNOLOGY KHARAGPUR

A. Corrigendum to the Advertisement No. R/7/Centre Scheme

1 For the post of Administrative Officer under Radar & Communication Centre.

Please Read: Duration 2 years or till the duration of the Centre whichever is earlier.

2 For the post of Senior Scientist (Soil Physics) Under the Schemes of Agricultural Engg. Department.

Please Read: Duration: 3 years instead of 5 years.

B. Corrigendum to the Advertisement No. R/5/79

For the post of Assistant Professor in Mining Engg. Department

Please Read: "Those who applied earlier for the same post against this Institute's Advertisement No. R/1/79 (Contd.) need not apply again".

A. K. Sur
REGISTRAR

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*Opinions expressed in the articles
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Hony. Editor : ANJNI KUMAR

Scientific "Grace" in University Examinations

V. Natarajan*

'Grace Mark' is a familiar phenomenon at the universities. It is an addition of a mark or two to the ordinary mark awarded by the examiner in order to pass a candidate, or to raise the total pass percentage by extending it to all the candidates.

The semantic sense of the term is suggestive of compassion or charity; the operational procedure is unidirectional, 'grace marks' being always added never subtracted. The whole system is marked by an arbitrariness, reflective of a mind in a confusion, shedding off a sense of guilt by graciousness, but dreading the idea of going too far with it.

However, this 'grace' can be scientifically worked out and that is what this article sets out project.

Given a set of marks which have been assigned to a candidate by what criteria are we to decide whether he passes or not? In the past and, even now in many universities, marks as they come from examiners are accepted on their face value and decisions of 'pass-fail' taken on the basis of minimum marks for a pass decided earlier. The sole virtue of this 'absolute' system is that it is unambiguous: we are never in any doubt as to whether the candidate passes or not. The objection to this is that it rests on a false assumption for 'marks' are not 'absolute' measures. A mark is surrounded by a penumbra of uncertainty and when we divide candidates into pass and fail in accordance with their marks the division may depart very widely from that which would correspond to the true order of merit.

If a candidate's true level is just above the pass line in all subjects and his mark is under-estimated in only one subject, he fails the examination. But the converse is not true. If a candidate's true level is just below the pass line in all subjects, his mark must be over-estimated in all of them before he can pass. The second contingency is much less likely than the first. The number of good students who fail is therefore larger than the number of bad students who pass. The use of 'absolute' system thus tends to give a high failure rate. There can be little doubt that this is a contributory cause of the abnormally high failure rates in the examinations of many Indian universities.

Mark is a measure number. When dealing with them, we must apply the standard theory of measurements and errors. In scientific measurements, three things are to be given.

- a numerical value of the measurement
- a range above and below that value in which we expect the value to lie
- a statement of the strength of that expectation.

All three are necessary; a numerical value (a) above means nothing, often (b) & (c) are implied and not given explicit. In the absence of (b) & (c), (a) will be given only an arithmetical value judgment. In scientific work, it is usual to specify a range which corresponds to a 'confidence level' of 50%

e.g. velocity of light = 299, 792, 500-100 metre/sec. This means that there is a 50% chance that the true value is included in the given limits. For instance there is a 95% chance that the true value lies within 300m/sec of the stated value. If a still higher degree of certainty is needed, we must allow even a wider range.

Let us apply this to examination marks. A mark differs from scientific measurements in that it has a wider range of uncertainty. The reason is: Physical Quantities like mass, temperature, density

*Project Officer, AIU, New Delhi.

etc are all stable quantities ; there are available very 'precise' and 'accurate' measuring instruments while for mental measurements; mental abilities measured like knowledge, understanding, application etc. are all unstable quantities and the measuring instruments "exams", are not that precise and accurate. This lack of precision is an essential element in the situation which must be taken into account. There is no justification for treating marks as if they were 'absolute' measures.

The uncertainty or imprecision of a mark is specified by its standard error (S.E.). This represents a range of values in which the chance of including the true value is 2/3rd (approx). If an examiner's SE is 5, he will make an error larger than 5 in about 1 in 3 cases. He will make an error larger than 10 about once in 20 times and an error larger than 15 about once in 400 times. What his actual error in any particular case can never be known, since we do not know the 'true mark' at which he is aiming. But we do know, from the SE, the probability that this true mark will fall in any given range. In particular, we can find the probability that the true mark will be above 'pass line'.

Consider an exam where the pass mark is 30, and the SE of the examiner is 5. If the examiner assigns a particular mark to a candidate, what are the probabilities that the true mark is

- (a) above the pass line
- (b) below the pass line

Let us call these 'passing probability' and 'failing probability'. These can be calculated:

Table 1

Marks	20	25	28	29	30	31	32	35	40
Assigned by the examiner	(-10)	(-5)	(-2)	(-1)	(pass)	(+1)	(+2)	(5+)	(+10)
Passing Probability	2.87	18.41	38.21	46.02	53.98	61.79	69.15	86.43	98.21
Failing Probability	97.13	81.59	61.79	53.98	46.02	38.02	30.85	13.57	1.79

It will be seen that even if the assigned mark is far below the 'pass line', there is still a chance that the candidate deserves to pass and conversely a high mark still leaves open the possibility that he deserves to fail. This is inherent and this must be recognised. The marks can never tell us with absolute certainty ; whether a candidate deserves to pass or not. All we know is the probability that he deserves to pass. This is the only information the marks can give, and we must make use of the information to the best advantage.

On the 'absolute' system we ask whether the assigned mark is upto the 'pass level'. On the grace mark system we see if some judicious adjustment can bring it to the pass level. If these systems are to be 'abandoned', we must learn to use the 'passing' probabilities rather than the marks themselves as the basis of judgment.

If we were concerned with one mark only, it would be unnecessary to insist on this new approach. Table I shows as the marks increase, so do the passing probabilities. It is therefore immaterial whether we fix a limiting mark or a limiting probability to indicate the pass line. This method is advantageous

when we have to deal with more than one mark and one subject. Let us consider two subjects that candidates have to appear and pass. Let us say 30 marks are pass marks in each.

Let A and B obtain marks as follows :

	Subject I	Subject II
A	30	30
B	29	32

On the 'absolute system' A passes; B fails on the 'grace mark system' if 1 mark is added in subject I, B also passes : but another candidate C who gets 28, 32 will fail. The probability of passing separately in 2 subjects is the product of the separate probabilities. Using Table I, we can calculate

For A, total probability = 53.98 × 53.98% = 29.14%
 For B, total probability = 46.02 × 69.15% = 31.82%

It is thus more probable that B, rather than A, has satisfied the requirement of passing in both subjects. B is therefore regarded as a better candidate than A; if A is allowed to pass then B must also.

Now consider an examination with three subjects. 35 is pass mark. Let A,B,C get the following combinations :

	Subject I	Subject II	Subject III
A	35	35	35
B	30	36	37
C	34	41	34

Passing probability of A is 16%
 Passing probability of B is 8%
 Passing probability of C is 19%.

If A is allowed to pass, C must also pass; B will fail. Now consider an examination with six subjects so that for each candidate, there are six probabilities to be multiplied. The marks of candidates are shown below together with probabilities that they pass in all 6 subjects.

Candidate: A: 30 30 30 30 30 30 total probability =2.47%
 Candidate: B: 50 47 40 38 29 22 total probability =2.88%

On the absolute system, A passes, B fails
 On the grace mark system, the result will be the same. And yet B is unquestionably a better candidate than A, in the sense that it is more probable, on the evidence that B satisfies the requirements rather than A. True the actual probability is small, but if A is allowed to pass, B must pass as well, and if there is an order of merit, we must classify B above A. In this case, it must be emphasised that we are not condoning a failure because he has done well in other subjects. We have abandoned this approach completely. We pass B in preference to A because it is more probable in his case that the true mark is above the pass line in all subjects.

(Continued on page 383)

Education and Democracy

Krishan Gopal*

For too often, the education that has been imparted in the past and that is being imparted at present, in our country and in many other countries, has been subjected to severe criticism not always based upon correct appreciation of the difficulties ahead or the manner in which educational effort may be reoriented. Yet, this is not altogether surprising, for it is not only in the educational spheres of public life, a good deal of introspection has become necessary.

Our constitution has laid it down that India shall be a sovereign democratic republic and that all its citizens shall be guaranteed justice, liberty, equality and fraternity. From this very concept, it becomes obvious that education can no longer be the privilege of the few.

When education is imparted to all the citizens of the State, it becomes obvious that any such education should, to be successful, be imparted in a way that will suit the natural aptitudes and inclinations of the persons who are to get the benefit of education. No longer is it possible for a single track effort to be made and that is why it is becoming increasingly clear that in a democracy, which gives full freedom to the individual to develop along his own lines consistently with the safeguards necessary, the opportunities made available should be such as will conduce to his full benefit.

Expansion of Facilities: It is true that, within the last half a century, there has been a great advance in educational effort in all the countries of the world. To speak of universities alone, it is interesting to note that a very large number of graduates are being turned out in most countries and more institutions for higher education have sprung up consequent upon the demand for such knowledge. Within the last half a century, the number of graduates in most countries has increased and, in some, even tenfold. But has this brought about a feeling of exultation among the public of these countries or has it, on the other hand, given room for a feeling of depression, of grave concern and of conflicting emotions when one realizes what exactly has happened during this same half a century?

Let us not, however, be thrown into a state of emotional depression and anxiety in contemplating the picture as it has been presented. When we speak of education, what exactly do we mean? Far too often, success or failure at school or college supplies no standards by which the promise of the future may be estimated. It is not by the ability to reproduce the words of others or to shuffle mathematical symbols rapidly that one can judge of the value of education that has been imparted.

A student may pass many examinations, obtain

several certificates and yet be only a kind of textbook gramophone. It has been aptly said that knowledge is proud that it knows so much, wisdom is humble that it knows no more. That is the crux of all educational endeavour. In our attempt to equip people with knowledge, have we the time or the opportunity to make them think for themselves, to make them realize what is the real objective of education, how they can cultivate that invaluable gift of becoming wise? Wisdom is not the monopoly of the educated people. Indeed more words of wisdom sometimes have come from those who are despised as illiterate and ignorant.

The Main Purpose: The purpose of all education should therefore be for something much greater than the mere acquisition of knowledge; and, while no form of indoctrination is to be admitted, democracy doubtless presents to the youth of the country an ideal which, if properly appreciated and understood, will lead to the rich heritage of a contended and peaceful life, a life with responsibilities and duties which everyone owes to his fellow citizens, to his country and to the world at large.

To a certain extent this is possible only if education, which implies not mere knowledge but true wisdom, has spread in such a manner that everyone appreciates the worth of democracy when run on true lines. Education is not just a matter of schooling; it is continuous process and education for effective participation in the business of democracy pretty much begins where formal schooling ends. But the fundamental principles should however be made clear to the school-going population at as early a stage as possible.

A Noble Cause: The main problem in a democracy is now best to educate the people to contribute to the rich life of a democratic society, with profit to themselves and benefit to the state and society. Democracy implies not merely a state of government, it is something which must pervade the whole life of the people and which must influence their conduct, their everyday activities, their thoughts and actions, their very mode of life. It is only then that one can speak of a democratic society and democratic form of government. It is obvious therefore, that, if these qualities are to be ingrained in the youth of the country, the true ideals of democracy must pervade their whole system of education and their extra-curricular and social activities. Nor is democracy a quality that is confined to one's own environment, society or State. Loyalty to democratic ideals implies loyalty to a noble cause which is and should be worldwide in its application.

Bertrand Russell has put this concept in nutshell when he says: "We need, and should teach in schools, loyalty to something greater than our own nation. It is nationalism that has brought the world to its present terrifying condition and that is making an acceptable solution of international problems so hard to find. Loyalty that is needed is loyalty to man, and not to man merely as a biological species but as the sole embodiment so far as our knowledge extends of certain values. Man is capable of creating and appreciating beautiful things. He can

*JNU Library, New Delhi.

experience love and admiration and ecstacy. It is true that he exemplifies also the opposites of these goods, the creation of hideous squalor, wilful ignorance, hatred and envy and anguish".

Freedom of Thought: A democracy educates for continuous and active citizenship whereas other forms of government educate only for passive obedience and technical skill. The *sine qua non* of a successful democracy is that all citizens think for themselves about all issues; the requirement of successful totalitarianism is that citizens obey those who think for them.

Applying this principle, can it be said with any degree of self-confidence that we are now a democratic State? Or can it be said that, with adult suffrage and with the coming into existence of the nascent democracy, we are in a position to claim those virtues that a democratic State can confer? Are the electorates in a position to think all issues for themselves? Can it be said that millions of people are not prepared just to obey those who think for them, but that they would think for themselves and decide on every important issue?

It may be asked: Is there any democratic State in this world which fulfil these conditions? There is the rub: Democracy stands at the crossroads today and the success of totalitarianism is in proportion to the extent to which the democratic state falls far short of the ideal concept of the democratic citizen.

In a democratic constitution, the three principle agencies which act and react on each other are the executive with the Ministry at its head, the legislature and the public by which we mean the electorate. In a well defined democracy, the Ministry subject to the approval of the legislature and the legislature submits itself to the ultimate authority of the electorate. There has no doubt developed for many years the authority of the judiciary in setting what constitutes a legal exercise of the powers vested in the executive or the legislature in a Constitution and what does not. And it is the judiciary which decides whether a legislative act is contrary to the constitution and therefore invalid.

While, therefore, a certain amount of judicial restraint is obviously exercised when either the executive or the legislature pass beyond the constitutional limits imposed upon them, it has to be realized that, after all, courts cannot, by their decisions, serve as a means of promoting the ideals of democratic form and conduct. It is the people that have to safeguard democracy and to let it run on proper lines. It is for this reason that, in all educational institutions, the proper spirit of democracy should be cultivated so that, in after life, the persons so trained will be able to safeguard, strengthen and promote the true form of democracy.

Limiting Power: It has been aptly said that it would be a dangerous delusion if the confidence that we placed in the men at the time of election were to silence our fears for the safety of our rights and that such confidence is everywhere the parent of despotism. "Free Government", quotes an author, "is founded in jealousy and not in confidence; so it is jealousy and not confidence which prescribes limited constitu-

tion to bind down those whom we are obliged to trust with power and so we find that in very democratic constitution, the limits to which our confidence may go and go further have been fixed".

It has to be realized that democracy implies the Government of the people, for the people and by the people and through the wisest of them. Democracy does not preach equality of all men whether it be in the intellectual, physical, social economic or moral sphere. But it preaches for the equality of opportunities to all men and envisage the possibility of no man being denied the opportunity to rise to his stature, by virtue of birth or other accidental advantages.

Fundamental Rights: There are two fundamental principles in a democracy; one is the principle that men make Governments and the other that there are limits to the authority of Government. It is a conception of democracy that, as Government is instituted to secure certain rights, its jurisdiction is strictly limited to the field assigned to it and if ever it over steps the bounds of its jurisdiction, its acts are not legal. It is for this reason that those who framed constitutions in the past were significantly conscious that, when the authority of Government was described for the first time in written constitutions, the limits of governmental authority should not be misunderstood. Hence were added to these constitutions bills of rights or what may be called fundamental rights. But this was not the only safeguard against the abuse of governmental authority. There were in addition the checks and balances in any form of democratic government. There were the powers delegated specifically to the executive and the legislature and there were the controls through bicameral legislatures, frequent elections and through impeachment. On the top of all this, there developed the practice of judicial review.

Majority Rule: It is true that in a democracy what we obtain is a majority rule and the party which has got the largest following in the legislature will in effect control all forms of legislation. But this does not mean that majority should be oblivious of its duty to the minority or that it should be impervious to the reasoned arguments and pleas put forward by the minority. It is very important, therefore, that those who are to be educated to work successfully for a democratic form of government should realize in what manner and to what extent majority rule should function consistently with the rights of minorities. What guarantee is there, in short, that the people if conceded the right will not do wrong?

Our constitutional system, like those of many other democratic constitutions, combines in itself checks and balances. A good deal of the politics in a democratic country will necessarily be concerned with reconciling majority and minority will, class hostilities, sectional differences, the divergent interests of producer and consumer, of agriculture and labour, of creditor and debtor, of urban and rural life, of tax payer and tax beneficiary, of the military and the civilian. In small issues as in great, the result is generally a compromise. Democracy, in short, whe-

(Contd. on page 386)

Adult Education—Means of Rural Development

B. V. Solanki*

Adult Education is a function of Rural Development. That means adult education primarily aims at mobilising the rural economy and making the multi-farms development of the villages. In a country like India, where the society is composed of heterogeneous classes of people following different ways of religions, different types of languages, it seems to me that the adult education will be of great importance.

For the development of rural community, adult education is as good as money—investment, machineries and tools of new technology. The welfare minded economists have pleaded for the “Investment in man”. To educate the adult is like to turn the barren land into fertile one. Indeed, adult education is a fruitful remedy for the bottling problems in a developing country.

At present, the Government of India is keenly interested in the programmes of adult education. The guidelines and useful literature of Adult Education are supplied by the Government machinery like University Grants Commission. For the effective implementation of these programmes, planning plays very crucial role. It is rightly said that planning and prosperity go together. Therefore the efforts should be made in the right direction. Merely the talk of a plan will not bring the desired fruits to a man or a country. It should be adequately executed. Once, someone said to Abraham Lincoln, if the tail is considered to be a leg, can we say that an animal has five feet? “No” said Abraham Lincoln. He added that the tail should be first converted into the leg. It suggests that the execution of a plan is of great avail and not the professional twist for educating adult population. In fact, this requires actual execution and sharp follow-up actions.

Communication and reporting are the parts of the management in the modern age. M.I.S. plays controlling role, to achieve desired objectives in any type of management. Therefore, one reviewing and monitoring cell should be there, either at the district level or at the University level to collect the exact details of adult education, implement them in the appropriate manner and control the whole programme effectively.

Especially, for periodical returns and relevant statements, to watch the progress of adult education, following points are to be considered :

- (1) Complete identification of the A.E. Centre.
- (2) Staffing pattern employed in this programme for each Centre.
- (3) Identification of the office/Block under whom the centre is working.
- (4) Yearly/quarterly/monthly financial targets.
- (5) Yearly/quarterly/monthly expected physical achievement of this programme. It should be in Units/Programmes/Mandays generated or in any other suitable form.

- (6) Brief narration of the preplanned activity to achieve this programme.
- (7) Actual financial cost incurred and out-put generated in relevant units.
- (8) It is asked to enclose relevant printed/cyclostyled reports/monographs/loose folders etc. if any pertaining to such activity.
- (9) Difference between the targets and achievements (financial as well as physical) and the reasons of this difference.
- (10) Difficulties/Bottlenecks etc. in implementing the scheme and its remedies.

It is to be noted that literacy is not the ultimate objective of Adult Education, it is indeed a means to achieve an end. This end is to enlighten the illiterate brothers of our country, equip them with the knowledge of modern science and technology and enable them to live a prosperous and peaceful life. They should be moreover made familiar with the fundamental inter-actions of animal husbandry, farming, cottage industries etc. which will certainly enrich their day to day life.

The adult education should not be based merely on the one or two techniques of teaching. The programmes must be decided, keeping in mind the local people, locality and the time of both—the learners and the teachers.

If the constant and sincere efforts are made in the effective implementation of adult education programme, I am sure the villages of our country will rise to the peak of prosperity. □

Scientific “Grace” in University Examinations

(Continued from page 380)

Given any set of marks and an assumed value for the SE of the examiner, there is a certain probability that the candidate, on true marking, would pass in all subjects. All candidates should pass for whom this probability exceeds some specified value. S.E.

The standard error of an examiner can be found, usually it is from 5 to 7. Tables are available for calculating ‘passing probabilities’ with $SE=5$ & $SE=7$.

The Research Cell, has a computer programme, that will print out passing probabilities for any number of candidates for any number of subjects with the help of a “computer stored passing probability tables”. If the marks obtained by candidates are given in several subjects, the passing probabilities can be printed out. The passing probability of a candidate scoring ‘pass mark’ in each of these subjects can be calculated and kept as a standard against which the passing or failing of every candidate will be judged. The Research Cell will be willing to help universities meeting this service. □

*Sardar Patel University, Vallabh Vidyanagar.

Education at Crossroads

In the centuries when the country came under foreign rule the system of education fashioned by aliens was such as would help the perpetuation of their dominance. There was very little scope for the development of initiative, imagination and creative talents. The masses that were seething with discontent had perforce to reconcile themselves to the unhappy situation. The aching passion to get freedom kept all sections of the people united setting at rest superficial problems that usually provoke excitement.

The advent of freedom, heralded with joyful hopes, has however, released pent-up forces and created situations which deserve to be handled with caution, sobriety

and constructive idealism. The deficiencies, limitations and evils of the system of education—the unfortunate bequest of foreign rule—have become very much manifest now. In spite of earnest efforts for about three decades, we have not been able to give a proper shape, cohesion and vitality to our education. There is a growing feeling that education has missed its track and failed, by and large, to fulfil its lofty mission. It is found fault with as being much too theoretical, stereotyped and unrelated to the needs of the country and the genius of our culture.

Our educational institutions seem largely to be factories of learning which turn out huge numbers of youngsters who find it difficult to fit themselves into life. Failure in getting gainful employment in spite of their degrees and diplomas, acquired after strenuous effort, fills them with a feeling of frustration which not unoften finds expression in

unhealthy directions. It is no use blaming the situation and indulging in vague criticism. Practical wisdom and patriotic zeal alike demand that all agencies that matter in education co ordinate their efforts and hammer out a satisfactory solution.

In the first place, it has to be understood that the unhappy plight of education to-day is the product of a combination of circumstances not altogether within our control, and a variety of causes that are of an extraneous nature. There has been a tremendous explosion of population in the country. A democracy which is committed to the provision of equality of opportunities has necessarily to provide for the

education of all the people. Moreover, democracy can function successfully only when the citizens are endowed with a fair degree of culture. The Government has to set up more and more educational institutions to cater to the growing needs of the community.

But by the very nature of its functions, the Government cannot concentrate all its attention on education alone though it is a vital sphere of activity. Its time, energy and resources have to get reasonably distributed among other departments of national life that are important. Private agencies have therefore to play a big role in organising and conducting educational institutions. — Diversity in the pattern of the educational system, total lack of co-ordination and the absence of specific aims that have to underline educational activities tend to aggravate the difficulty of the situation.

The common people have yet to realise that education has to be

in consonance with the aptitudes and abilities of youngsters and that all of them need not go through the same type of education in their own interests and in the interests of national progress. The result is that there is a large-scale desire on the part of the parents to send all youngsters to colleges, irrespective of their talents, tastes and temperament. Schools and colleges that offer academic courses get over-crowded. Since instruction has to be on a mass scale to heterogeneous groups of pupils by teachers of varying talents, the quality of education suffers very much. Even when adjudged by fairly liberal standards not all the youngsters come out successful in the final test revealing by implication that the time and money spent in educating a large number have been futile. The employing agencies set up by the Government and the non-official sector are not able to absorb all the youngsters that emerge out of educational institutions. The poignant feeling of disappointment and frustration caused by such a situation leads to uneasiness and disturbs the equilibrium of society.

It has to be realised that the complexion of education has changed very much in the present world and that its sphere has greatly enlarged in the wake of scientific advancement and the growth of civilisation. Education is not merely literacy. Literacy is, of course, a necessary phase in the process of education. But it is not the be-all and end-all of education. Education is a total activity, a synthetic discipline, which has to take into its ambit the development of the physique, the enlargement of the mind, the sublimation of the emotions and above all, the refinement of the spirit. Educational Institutions are no longer the exclusive agencies of the new knowledge that is essential for understanding the phenomena in the world and for solving the problems of national life. Education has to draw sustenance from other departments of national activity and to depend for its fulfilment on a variety of other institutions engaged in activities that nourish national life. Edu-

CONVOCATION

cation has thus become a corporate responsibility which has to be shared by several agencies interested in equipping the young for a purposeful life and in building up the nation on healthy lines. This factor has to be borne in mind in all attempts to reorganise our system of education.

It is true that the ultimate factor in education is the teacher. It may not be too much to say that the quality of the teacher is the quality of education. But in the present context, the role of the teacher has become much shrivelled. He is no longer the sole custodian of knowledge: nor is he able to exert all his influence individually on a larger number of youngsters that seek instruction at his hands. His work is very often judged by the spectacular results he is able to produce at the public examinations. Hence, much of his time and energy get absorbed in equipping the pupils for examinations and helping them scrape through the eccentric tests.

The higher aspects of education do not loom large in his mental horizon because he has to satisfy the constricted needs of a rigid system. Added to this, other agencies like the radio, the television and the film attempt to play an important part in education. The atmosphere outside of educational institutions, created by controversial non-academicians and sustained by conflicting ideologies, tends very much to neutralise the good work of the teacher.

Teaching is not so much the communication of facts and figures as a quickening of the mind into creative activity by the personal influence of the teacher. The teacher has not merely to dump information into the minds of the young but develop in them a holy passion for acquiring purposeful knowledge that will ripen into wisdom by means of diligent and concentrated effort. This noble object the teacher can achieve only when it is possible for him to establish intimate personal contact with the young and exert his wholesome influence on them in an atmosphere of freedom. It

is inspiring to learn that in the Nalanda University of old, for the 10,000 pupils who sought education there were at least 1,000 teachers to impart effective instruction to the young in different branches of learning.

The parents have quite a significant part to play in the education of the young. It is well to remember that the parents are the first teachers even as the teachers are the second parents and that the home is the first school even as the school is an extension of the home with all its chastening influence. The child's early education is definitely shaped by the activities of the parents in their homes. The child imbibes the rudiments of knowledge only in the domestic set-up, watching and observing all that is being said and done. The parent's responsibility does not cease when the son or daughter is put to school or college. It is a sacred duty cast upon him that the salutary cumulative influence of the band of teachers is maintained and strengthened at home. This has become imperative in the present when a number of forces in the external world threaten to atrophy the influence of educational institution.

It is a hopeful augury for the future of our land that devoted and determined efforts are being made to reorganised education on rational lines so as to make it a radiant instrument of national progress and homogeneity. Even the best of intentions sometimes leads to mistakes and creates difficulties. It has to be realised that in our country with its vast area, variety of languages and diversity in outlook, brought about by historical, geographical and political causes, it is not easy to evolve a pattern of education which will be suitable to all parts of the country. But it behoves us in the light of the experience we have gained in the three decades of our independence and the wisdom we have been able to garner through the study of progressive trends in the enlightened world to fashion a system of education which will ensure uniformity in essentials and promote national solidarity.

In matters like the span of edu-

cation its classification into convenient units each of which will be self-sufficient and lead on to the next stage, and the maintenance of academic standards there has to be a core of identity. Education has to be absolutely free from the influence of partisan politics, parochial bigotries and linguistic fanaticisms. Only then will it fulfil its purpose as a unifying and civilising agency promoting integration. It should be possible for scholars and teachers to move freely from one State to another and pursue their avocation without any difficulty. On the basis of inter-State cordiality, it should be easy for universities which offer specialised courses of studies in the higher realms of research in specific subjects to attract talented men from different parts of the country. It follows therefore that the accent in education in general has to be on the quality precision, purposefulness and relevance of the material presented to the mind rather than its quantum, diffusion, discursiveness and sweep.

In a democracy which seeks to ensure the maximum good to the maximum number, it is a positive disservice to mechanically transmit to the young exploded theories and worn-out facts which have been proven to be out of date. It is said that in progressive countries the toys that children play with are miniature models of the latest scientific discoveries. As against that, the scientific knowledge that we assiduously impart to our youngsters in advanced courses is said to be very often far behind times. The result is that several of our brilliant young men feel inclined to migrate to foreign countries, to find full scope for the development of their native talents. Not unoften do their services get lost to the motherland. The duty therefore devolves itself upon those who fashion educational policies to be abreast of the times and to cause the teaching material to be organised in such a manner that our youngsters get the benefit of the latest trends in educational advancement.

Another essential in education is the inculcation of the right atti-

tudes in the young. To-day, humanity has become contracted into a close fraternity of compulsory concord. Our plans and projects for the progress and prosperity of mankind have to be on an international, if not interplanetary basis. In such a context, parochialism or chauvinism appears to be an anachronism. Cordial co-existence, and not exclusive independence, is the ideal the progressive world has set before itself. In the safety and peace of all the people, lie the safety and peace of every individual. Hence man has to be just man if he is to survive, and he has to develop positive attitudes of goodwill, helpfulness, tolerance, sympathy and servability. Education while being broad-based upon the genius and culture of our land, has to train the young for the duties and responsibilities of enlightened national and world citizenship.

Yet another feature that deser-

ves to be interwoven into our educational system to make it purposeful is the provision of opportunities to the young for rendering useful service in vital directions of national life. This has to be done even in the period when they are in active tutelage. They have to be introduced to spheres of national activity which would help them to understand the problems that dwarf progress and to contribute to their solution in their own way. This will also develop service-mindedness and devotion to the motherland.

We often repeat that India is a land of villages and that its prosperity lies in the progress of the villages. But seldom do we give our constructive thought to the manner in which the villages may be awakened to the new life that is surging the land and quickening it into a new potentiality. In this task, it is very necessary that we involve our youngstres who bubble with life

and enthusiasm and canalise enter into fruitful service in spheres like sanitation, health, education and citizenship. It is not enough if social service in rural areas is made a sporadic activity spread over a few days. Our prospective graduates must have a continuous courses, parallel to their academic pursuits, which would give them opportunities to identify themselves with the village folk, sympathise with their difficulties and harness their knowledge and talents in the service of the rural areas in an abiding manner. The massive scheme of adult and non-formal education that the Government of India has launched holds out glorious opportunities of service to the educated young. Education while drawing out the best in individuals has to flower into useful service. [Extracts from the convocation address delivered by Shri Prabhudas Patwari, Governor of Tamil Nadu, at the Andhra University] □

Education and Democracy

(Continued from page 382)

ther from instinct or from necessity, furnishes or at any rate should furnish its own checks and balances quite aside from such as may be provided in written constitutions.

Need of Flexibility : But there is this to be decided of the checks and balances of democratic politics that they are natural, not artificial, that they are flexible rather than rigid, that they can yield to public opinion and to necessity. They do sometimes enable the majority to ride down the minority; they do far more enable the minority to delay and defeat the majority. It all depends upon the conscience of the majority and how far it will conduct itself, especially when given the opportunity to have a huge majority by caring for and appreciating the points of view and the interests of the minorities. Nor should the minority be vacillating, selfish and afraid to criticize effectively when necessary. That is why a democratic constitution tends to crumble if the minority is significant and the majority is what people call a steamroller majority.

Ultimately, however, the responsibility for all this lies with the people. If they are apathetic, careless, blind, if they are frightened or nervous, if they say no more where they feel the acts deserve better exposition and support, then the people pay the price and it is right that they pay the price, the price which will lead them ultimately to slavery and the replacement of democracy by a totalitarian rule. As the fault is theirs, so too is the remedy. But how far can an uneducated, illiterate, promiscuous and easily excitable electorate cultivate these virtues?

There is another danger to which one should

make a passing reference with some hesitation. Can democracy function if emotional, spiritual or other influences are brought to bear upon the consideration of political issues? It would be unfortunate ciples and a dangerous precedent which will bring democracy to a standstill, if political decisions are forced by emotions. Whatever might have been in the scope in the days of foreign domination when opportunities were lacking for decisions to be arrived at through the democratic channels of change of Government and the will of the people being exercised, it would certainly be a negation of the true principles of democracy if such methods were to be attempted in a free and independent country which is just struggling to establish a proper democratic form of government. Thus we see the wider aspects of education that ought to be borne in mind and cultivated with assiduity if democracy is to function properly.

But the education of the youth of the country depends not merely on what they are taught but how their minds are attempted to be guided along right lines for the proper understanding of democracy. The youth of any country are not slow to imitate the example set by their elders and unfortunately the power to imitate is greater, when those examples are not hard to follow and are not quite consistent with the strict standards of rectitude. Many, therefore, are the problems connected with education but the greatest of all those problems is to train our young men into a way of life which will cannote their complete understanding and acceptance of the noble ideals of democracy and of the great principles involved in a democratic form of government and in the working of a truly democratic society. □

Conference on air and water pollution control

Inaugurating the World Environment Day and the Conference on air and water pollution control at the Indian Institute of Technology, Bombay, Prof. M.G.K. Menon, Secretary in the Department of Science and Technology, said that the Environment Day had a special significance in view of the year being the International Year of the Child. He called for concentrated efforts on problems of every day life and urged the scientists and planners for ensuring a reasonable quality of life for the children. Environment was not a problem of pollution but was the future of mankind. Man had lived on this earth for millions of years and very large part of it was now over populated

had to develop within the framework of environment.

Prof. A.K. De, Director of the Institute welcomed the guests and expressed the hope that deliberations of the conference would provide the guidelines for ensuring better control of the environment.

Prof. K.S. Karanth delivered his keynote address on 'total environment' and Dr. A. K. Ganguly, National Fellow spoke on 'progress of desert'.

Plea for non-interference in campuses

Dr. Hari Narain, Vice-Chancellor of Banaras Hindu University, appealed to the politicians to keep away from the campuses in

environment. After a period of four or five years they found themselves unfit to return to their own surroundings or to find gainful employment in the urban areas which led to frustration among students.

NCERT plan for non-formal education

The National Council of Educational Research and Training is planning to implement a UNICEF-assisted project which envisages imparting part-time and non-formal education to children with a view to improving the quality of their life. The Ministry of Education has approved the project which is proposed to be implemented with the collaboration of state governments. Teacher-trainees in the educational institutions will start developing problem-based and community oriented learning material to help universalisation of primary education in the country. The focus of the project will be on learners from the disadvantaged population. Radical changes have been proposed in the content and process of curriculum development. The field workers would develop the material in consultation with the learners and the community to make it relevant. A self-contained unit consisting of different episodes will be drawn from real life situations. The teachers in the training institutions would be oriented to ensure the process of curriculum decentralisation and help the trainees in the development of learning episodes. The project document emphasises the need for maintenance of question banks to enable the learners to take examination in different grades at any time of their choice.

Summer institute in Economics

The Department of Economics of the Mithila University, Darbhanga, organised recently a Summer Institute in Economics. Dr. R.K. Sharma, Vice-Chancellor of Kameshwar Singh Sanskrit University presided. Dr. Gautam Mathur, National Fellow in Economics at the Allahabad University in his papers analysed the various problems of economic

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which created the problems of consumerism. Modern science and technology had therefore a primary responsibility towards the society. Prof. Menon pleaded for 'Gandhian concept providing for simpler way of life, food shelter, recreation and education. He was happy to note that the Indian Institute of Technology, Bombay had introduced a two year multi-disciplinary post-graduate programme on environmental science and engineering. He suggested for giving a course on environmental engineering, to the chemical engineers and chemists. The rural areas had been neglected all along and become an unattractive place to the people. To avoid rampant falling of trees in these areas, alternative fuel to the villagers should be provided. Prof. Menon said development and environment were not contradictory and we

the interest of students and country. He said recently in Varanasi that if politicians stopped projecting their ideologies in the campuses the academic life would become peaceful. Influence of different shades of ideologies which confused the policies on education and teachers apathy towards students were the main factors of unrest in the campuses. Dr. Hari Narain said the country had used the students in the independence struggle but now the cause before the country was to fight poverty which was possible through purposeful education and gainful employment. A large majority of students and teachers wanted the universities to function smoothly but a small number of outside elements created problems at the campuses. Our policy on education had also not guided the young boys and girls who were being uprooted from their

growth and suggested a judicious application of deficit financing.

Dr. Hargobind Singh, Vice-Chancellor of Magadh University, Dr. Madneshwar Mishra, former Vice-Chancellor of Mithila University, Prof. Divakar Jha, Visiting Professor at Patna University, Prof. B. Ganguly of Magadh University, Prof. B. Thakur and Dr. P.K. Jha of Mithila University, Prof. Bansidhar Singh of Bihar University, Dr. D.D. Guru of A.N. Sinha Institute spoke on the recent developments in economic science.

Prof. Uma Nath Jha, Dean of the Faculty of Arts at the University in his valedictory address urged the participants to utilise the knowledge acquired during the Institute for the upgradation of academic standards and solution of problems of the nation.

Asian games

Prime Minister, Shri Morarji Desai inaugurated the first meeting of the organising committee of the 1982 Asian Games which was held recently in New Delhi. He urged the sportsmen, officials and sports organisations to concentrate their efforts on making the games a success. The Prime Minister asked the committee to provide a proper environment for training and conditioning of sportsmen so that the country's image could be held with dignity.

Dr. P.C. Chunder, Union Education Minister said at the meeting that elaborate and well-planned schemes for training of teams for 1982 Asian Games be drawn up so that the country could have a fair share of glory. The Union Ministry of Education would be willing to offer all assistance to implement these schemes. Dr. Chunder referred to the Prime Minister's observations at the meeting that the performances of our teams were being affected through poor training. The training institutions in Patiala and other places would be willing to be associated in coaching schemes drawn up by the organising committee and the national federations for training of our sportsmen. Optimum use could be

made of various cultural agreements by inviting teams and coaches from other countries for training of our sportsmen. The sportsmen could also be sponsored abroad under these agreements. Dr. Chunder reiterated the need for making sincere efforts in preparing for the games to meet the aspirations of our people.

Shri Vijay Kumar Malhotra, President of the organising committee said that the committee had approved the following nineteen games: archery, athletics, badminton, basketball, boxing, equestrian, football, cycling, golf, gymnastics, hockey, shooting, swimming, table tennis, tennis, volleyball, weightlifting, wrestling and yatching. Kabaddi and Kho-Kho will be organised as demonstration games. In case Kabbadi was included as regular game with the approval of the Asian Games Federation, cycle polo will be included as demonstration game. The games will now be organised from October 31 to November 14, 1982.

Sports policy

The All-India Council of Sports has submitted the report of the draft committee on Sports Policy to the Education Ministry which is expected to convene a meeting of the various authorities to discuss the recommendations. Shri M.R. Krishna, MP and Chairman of the drafting committee said recently in Bangalore that the recommendations of the Committee had been approved by the Council. The draft policy has suggested involvement of people in sports and preparation of selected players for international competitions. The various sports councils, federations, associations and educational institutions have been recommended to be brought closer to coordinate and promote sports effectively. The committee had recommended that the programme of sports and games should be discussed with the Planning Commission and its budget should be discussed as a separate item instead of treating it as a part of the Education Ministry's budget. Sports should

be made compulsory in educational institutions all over the country. The document suggests creation of additional facilities for the development of sports at village, district and state levels. Sports federations have been assigned additional responsibilities to organize and promote sports and games. Establishment of special hostels in states for talented boys and girls have been recommended.

Survey of rural population by Madras Medical Institute

The Syndicate of the Madras University at its recent meeting was informed that the Department of Science and Technology of the Govt. of India has sanctioned a grant of Rs. 29.3 lakhs to the Postgraduate Institute of Basic Medical Sciences, for carrying out a survey of health and diseases of the rural population of Tamil Nadu. The Central Government had also sanctioned a project on the genetic and ultrastructural analysis of inherited diseases and disorders for which a sum of Rs. 34.2 lakhs had been sanctioned.

The Syndicate approved the pattern of restructured B.A., B.Sc. and B.Com. courses which are likely to be introduced from the next academic session.

UNESCO regional consultation

The Department of Anthropology of Ranchi University organised a meeting on UNESCO Regional Consultation on the Development of a Network of Research Institutions in Asia. Mr. Y. Kono, Director of the Cultural Studies in UNESCO emphasised the need to study the historic cities in Asia. He announced that the journal of the Asian Culture would be published from Ranchi. Prof. L.P. Vidyarthi while introducing the theme of the meeting said that Asia was not only the largest and thickly populated continent, the religions of Hinduism, Christianity, Islam, Buddhism, etc. as well as the great civilisation emerged here.

Reintegration of culture in education

Inaugurating the two-day conference of Ministers Incharge of art & culture in States and Union Territories, Dr. P. C. Chunder, Union Education Minister stressed the need for evolving a cultural policy to preserve and propagate the country's rich cultural heritage. He emphasised the need for a comprehensive survey of the country's cultural heritage, continuity of which was an important element in history. Scholars should take a closer look at tribal and rural culture which were found dynamic. Dr. Chunder said that culture should form an integral part of education. A high-level committee had been constituted to give its suggestions in this regard. There was no conflict between science, technology and culture, he added.

The conference has recommended that art and culture may be given a place in the curricula in schools at elementary and secondary level all over the country. The need for preservation and documentation of those aspects of Indian cultural traditions which were in the stage of extinction was stressed at the conference. It was felt that proper attention was not being paid for the physical preservation, conservation and cataloguing of the manuscripts. The conference suggested that special attention should be paid for the collection and documentation of oral traditions especially in the field folk literature. It was recommended that important university museums should be declared as national institutions.

University Tamil teachers conference

Shri C. Aranganayagam, Tamil Nadu Education Minister, inaugurated recently in Hyderabad the Eleventh All-India University Tamil Teachers' Conference organised by the Osmania University as part of its diamond jubilee celebrations. He said the medieval literature used as a tool for spreading Bhakti cult was not found useful for the progress of common man. The need of the

day was to develop a modern literature in a scientific way for the common man to keep pace with the fast changing times. The language teachers should become part of the mainstream of the community so that language could be used as an effective instrument for common progress. The Minister said since the syllabus for Tamil language was almost same both at the school and college level, there was not much scope for the students to learn more from the language. The minister asked the teachers to teach Tamil to those not knowing the language by adopting simple methods.

Shri B. Venkataram Reddi, Andhra Pradesh Education Minister said in his presidential address that Tamil and Telugu had much in common and closer affinity towards each other.

About 150 teachers from all over the country participated in the conference.

Technology to meet rural needs

The technology policy statement drafted by the National Committee on Science and Technology lays emphasis on self-reliance and technology geared to rural needs and relevance. Dr. Atma Ram, Chairman of the NCST said recently in New Delhi that due attention had not been given to technology aspect in the science policy. Although there had been tremendous achievements in the field of industrial and agricultural science, the masses in the country lived below the poverty line. The new policy would help to take the benefit to the rural poor. He said that the country had the third largest complement of qualified scientific and technical manpower and if a proper technology policy was implemented, the position in rural areas would change completely.

Visva Bharati organises social science congress

Dr. Sūrajit Chandra Sinha, Vice-Chancellor of the Visva Bharati University inaugurated the fourth session of the Indian

Social Science Congress held recently in Santiniketan. He stressed the relevance of social science as a related approach to various problems and how different disciplines could be integrated to make this feasible. There was a peculiar relevance of such studies in the content of Rabindranath's experiments in Sriniketan and Santiniketan. Shri P. K. Mukhopadhyay said that works of Tagore revealed the merit of his pioneering work and thought in the field of Social Sciences. Prof. B. K. Roy Burman spoke of the challenges faced by the modern world and emphasised the need for a proper study of social sciences. The alienated existence of man could be abolished through a meaningful approach to life. He said a multi-disciplinary exposure to meet challenges of life could be built by social sciences.

The conference deliberated in twelve sessions ranging from economics and philosophy to defence studies.

Community involvement in vocationalisation scheme

The National Council of Educational Research and Training organised recently a two-day seminar to review the implementation of vocationalisation of education in some of the States and Union Territory of Delhi. The seminar recommended that there should be flexibility in the duration of courses which should extend from one to three years. Since the general policy was to accelerate the development of rural areas it was thought that the thrust of vocational programmes at the higher secondary stage should be in rural areas. The administration of vocational education at the post secondary stage was recommended to be decentralised. The seminar reiterated the need for extending the apprenticeship programme to those who complete vocational courses at the post-secondary stage. The seminar also stressed the importance of associating the consumers and involving the community in formulation of courses and making the programme a success.

Dr. Shib K. Mitra, Director of

the Council said the scheme hinged on flexibility which was reflected in the semester pattern and in the statutes of various universities in the country.

About 50 delegates from all over the country including representatives of the Planning Commission participated in the deliberations.

Adult education programme

Dr. P. C. Chunder, Union Education Minister informed the members of the consultative committee of MPs attached to his Ministry that about 1.5 million adults had been covered under the national adult education programme during 1978-79. The target has been fixed to impart adult education to 45 lakh persons during 1979-80. The Minister said the response from colleges and universities to this scheme had been encouraging. The University Grants Commission has issued guidelines to universities to treat adult education and extension programmes as an integral responsibility which should be given a distinct status. The programmes on adult education and elementary education were complementary to each other and there was no conflict between their objectives. Dr. Chunder informed the members of the committee that the adult education programme was being evaluated by agencies which had the expertise and reputation in the field of social research. A beginning had been made in Gujarat where a quick appraisal of the work was carried out by Sardar Patel Institute of Economic and Social Research, Ahmedabad. Institutions have been identified for conducting evaluation in Maharashtra, Rajasthan, Bihar and Tamil Nadu. The government had given the highest priority to universalisation of elementary education for which a provision of Rs. 900 crores had been made for the years 1978-83.

Code of conduct for teachers

The managements of the private colleges in Tamil Nadu have drawn up a draft code of conduct for their teachers which will be

discussed shortly by a committee represented by teachers, managements and government. The code prescribes for the teachers to declare their assets and liabilities to the management on their first appointment and at an interval of every twelve months. It prohibits the staff from associating themselves with any political party or organisation. The employees of the private colleges will not be allowed to take part in any election to the legislature or local authority as per the draft code.

Calcutta to appoint department heads by rotation

Dr. R.K. Poddar, Vice-Chancellor of the Calcutta University said recently in Calcutta that the university council at its recent meeting had approved to appoint Heads of all post-graduate departments through rotation by seniority. The decision of the council would now be communicated to the Chancellor. The procedure prescribes that the Vice-Chancellor in consultation with the Pro-Vice-Chancellor will appoint the head of the department from a panel of full time permanent teachers on the basis of seniority and their capacity with regard to academic and administrative leadership. There would also be a Departmental Committee in every post-graduate department.

Workshop on methods of detecting adulteration

Dr. Madhuri Shah, Vice-Chancellor of S.N.D.T. Women's University inaugurated recently the workshop on laboratory and household methods for the detection of food adulteration held at Sir Vithaldas Thackersey College of Home Science in Bombay. Experts from Food and Drug Administration of the State Government, Consumers' Guidance Society of India, Public Health Department of Bombay Municipal Corporation and representatives from legal profession and food industries involved in the control of food adulteration were invited to speak on different aspects of the problem. Members of the academic staff gave lectures on

detection methods of adulteration commonly encountered in different food articles and helped the participants to carry out the laboratory tests. The Food and Drug Administration organised an exhibition on food adulteration for benefit of the public.

An urgent need to disseminate the information was felt among the participants who decided to carry out the testing of various food articles and make available the facility to the community in their vicinity.

The Workshop was sponsored by the University Grants Commission.

National policy on education

Dr. P. C. Chunder, Union Education Minister informed recently the members of the consultative committee of Parliament attached to the Education Ministry that the draft national policy on education was expected to be discussed in the monsoon session of Parliament. The draft was prepared after a series of consultations with the state governments, educationists, teachers organisations and was presented to the Parliament during the budget session. Dr. Chunder said that about one and a half million adults were covered by the adult education programme during the year. The members of the committee were informed that a central commission on primary and secondary education would find it physically impossible to deal with over 6 lakh schools in the country. The Union Govt's capacity to finance such a Commission was also limited.

Plan to provincialise deficit colleges in Assam

Shri Lakshyadhar Chaudhury, Assam Education Minister said in Gauhati recently that the state government was planning to provincialise the deficit colleges in a phased manner with a view to imparting uniform education with better facilities. He said that the state government would take over fourteen colleges under the scheme during the current financial year.

Teaching and research in Anthropology

The Department of Anthropology of Ranchi University organised recently a three-day symposium on the status of teaching and research in Anthropology in Bihar. Shri Bhupender Singh, Director of the Tribal Affairs in the Union Ministry of Home Affairs in his inaugural address stressed the need for re-orientation in teaching and research of the subject.

Dr. L.P. Vidyarthi, Director of the seminar, traced the history of anthropology, its teaching and research in the world, particularly in Bihar.

The symposium met in five sessions and made suggestions for further study and research in the discipline. The seminar sponsored by the University Grants Commission, was attended by scholars including the representatives of Survey of India.

Entrance test for postgraduate admission

Sri Venkateswara University, Tiurpati, will conduct an entrance test for candidates seeking admission to the postgraduate courses. The candidates will choose the subject for the test out of the subjects which were offered at the degree level. In the case of postgraduate courses which are not offered at the graduate level, the candidates will have to choose one of the subjects studied by them in Part II of the degree examination.

Economic use of plants suggested

Prof. Sher Singh, Union Minister of State for Defence, Science and Technology, in his inaugural address at the 192nd anniversary of the Indian Botanic Garden, stressed the importance of research on economic use of plants in the country. The Botanists should concentrate on this aspect in addition to their basic research. The forest and the agricultural departments looked after a limited number of plants of their in-

terest leaving a large variety of flora to be studied and utilised. Some plants which had great medicinal value were now becoming extinct. Conservation of these plants will be helpful in balancing the ecosystem and provide raw-material for drugs and medicines. Prof. Sher Singh emphasised the need for proper maintenance and development of the gardens for educational purposes.

Greater use of animal resources suggested

Dr. N.S. Ramaswamy, Director of the Indian Institute of Management, Ahmedabad, has suggested for the coordinated development, management and utilisation of animal energy resources in the country. He said recently in New Delhi that animal energy resources were very important to the rural economy and little attention had been paid in the field so far. The investment in the animal system in the country exceeded Rs. 25,000 crores. The country had ignored the utilisation of animal energy resources as appropriate technology which could be achieved at a small cost. There was also much to be done in the redesigning of implements, tools and machinery using animal power.

Panjab Varsity organises NSS camps

The NSS Department of Panjab University organised about forty-five camps during the summer vacation in which about three thousand students including one thousand girls participated. The 10-day camps under the Youth for Rural Reconstruction Programme were held at various places in the districts of Ludhiana, Ferozepore and Hoshiarpur and the union territory of Chandigarh.

The projects undertaken by the student volunteers included earth-work on link roads, health education and provision of medical facilities with the collaboration of the health authorities, mass immunisation of children, adult education and promotion of recreational and cultural activities.

Pantnagar Varsity promotes nuclear research

Pantnagar University is using radioisotopic and other allied nuclear techniques for basic and applied research in improving agricultural productivity. Varieties of important pulse crops have been screened by using radioactive carbon dioxide to find out their capacity to utilise solar energy. The process would enable to select the crops which have the highest yield potential. The biochemical role of micronutrients in plant growth is being studied using radioactive isotopes.

Bihar Varsities discuss adult education programme

The representatives of the Universities of Bihar, Mithila and Kameshwar Singh Darbhanga Sanskrit met recently in a 2-day workshop to discuss the various ways and means to launch adult education programme in their areas. The workshop was inaugurated by Dr. S. Rahman, Vice-Chancellor of Bihar University who expressed his university's determination to implement the programme.

The University Grants Commission sponsored the workshop. The UGC laid great stress on the participation of universities and colleges in the literacy drive and other adult education programmes. One-fourth of the illiterates of the world lived in our country and special efforts were required to tackle the problem. The percentage of literates in Bihar was the lowest barring only one or two states and progress on adult education programme was also not encouraging. The universities in the State had therefore a greater responsibility to educate the masses.

The State Director of the Adult Education said the government could not achieve the goal without the cooperation of universities and colleges. Illiteracy was an obstacle in the socio-economic progress of the state and adult education was aimed at providing immediate benefits of self-consciousness and professional effi-

ciency. He said that the state government was planning to appoint adult education officers in the various districts.

Examinations in Bihar Varsities

The Bihar State Inter-University Board at its recent meetings held in Patna under the presidency of the Chancellor and the State Chief Minister separately reviewed the position of examinations in different universities. The Vice-Chancellors of the state universities participated in the meeting. The Chief Minister requested the Vice-Chancellors to take necessary steps to hold examinations in their universities in time and assured them of government help in fair conduct of these examinations. It was observed that though intermediate examinations of different universities were not behind the schedule, the degree and post-degree examinations were very late. The Vice-Chancellors were requested to regularise the degree and post-degree examinations by the end of the year and the middle of 1980 respectively. The Puja vacation will be utilised to complete the schedule of examinations. The meeting decided to remove the gap between examinations of two papers in order to restrict the period of examination schedule. The examination results will be compiled and published within a period of sixty days.

University institutions in the Commonwealth

The Association of Commonwealth Universities, 36, Gordon Square, London WC1H 0PF, has released recently the twenty-third edition of the list of university institutions in the Commonwealth. The list contains the names of more than three hundred Commonwealth institutions and also gives the names of the executive heads of such institutions and of the officers to whom general enquiries should be addressed. The Association will supply one copy of the list free on request. Larger orders will be charged at cost price.

Assam college principals confer with Gauhati VC

A delegation of Assam College Principal's Council discussed recently the various problems faced by non-government affiliated colleges with Dr H.K. Baruah, Vice-Chancellor of Gauhati University. It was pointed out at the meeting that the colleges should be treated as an inseparable part of the university as these institutions were responsible for teaching about ninety per cent of the students who received higher education in the State. The academic programmes aiming at improving higher education in the State could not afford to neglect the affiliated colleges. The Council put forward a number of suggestions for improving of colleges which included establishment of research units in colleges, frequent interaction between college and university teachers, organisation of seminars and symposia, setting up of a central machinery in the matter of physical development, changes in conduct of examinations and introduction of an examination system which was socially acceptable and useful to the students. The Vice-Chan-

cellor assured the Principals that necessary action will be taken soon on their suggestions.

Personal

1. **Shri Girija Prasad Pandey, a retired IAS Officer, has taken over as Vice-Chancellor of Lucknow University.**
2. **Prof. R. K. Poddar has taken over as Vice-Chancellor of Calcutta University.**
3. **Dr. R.S. Mishra has taken over as Vice-Chancellor of Kanpur University.**
4. **Dr. R. Dwarakinath has taken over as Vice-Chancellor of University of Agricultural Sciences, Bangalore.**
5. **Dr. Sukhdev Singh has taken over as Vice-Chancellor of Jawaharlal Nehru Krishi Vishwa Vidyalaya.**
6. **Prof. K.M. Lodha has taken over as Vice-Chancellor of University of Jodhpur.**

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Mathematics

1. Bhatt, G. M. J. Some problems in functional analysis. University of Saugar.
2. Bhattacharya, Manoranjan. On some problems connected with special functions. Utkal University.
3. Sengupta, Prabirkumar. Some problems on Eigen function expansions involving a pair of second order differential systems. University of Calcutta.
4. Singh, S. L. Fixed point theorems in metric and Banach spaces. Kumaun University.
5. Singh, Shyam Kishore. Second order asymptotic solution of the problem of the motion of artificial satellite. University of Bihar.
6. Swami, Sidram Panchakshari. A study of certain Riemannian spaces in general relativity. University of Poona.

Physics

1. Asgekar, Vivek Bhalchandra. Design studies of microtron electron accelerator with application to the Cherehkov radiation in millimeter wave range. University of Poona.
2. Ghosh, Sujata. Biophysical studies on *Vibrio cholerae* DNA. University of Calcutta.
3. Hingane, Laxman Sitaram. Theoretical studies in aeronomy. University of Poona.
4. Lakshminarayana, Sreerama. Beta gamma directional correlations and nuclear structure. Andhra University.
5. Pant, T. C. Energy transfer and ion-phonon interactions in luminiscent systems. Kumaun University.
6. Ratnam, Sri Rangam Raja. Some studies on meteors and sporadic—E. Andhra University.
7. Sarkar, Swapan Kumar. Radioclimatological effects on tropospheric radiowaves propagation over the Indian sub-continent. University of Delhi.
8. Sarma, Akella Viswanatha. Ultrasonic study of liquids. Andhra University.
9. Sengupta, Kamalendu. Microwave absorption and structure of polar organic molecules in the liquid state. University of Calcutta.
10. Sharma, Hari Om. Lattice anharmonicity of diamond-structure crystals and alkali metals. University of Delhi.
11. Sudhakara Reddy, Dandala. Internal conversion studies in ^{79}Sc , ^{123}Sb , ^{125}Te , ^{129}Xe and ^{139}Ce . Andhra University.

Chemistry

1. Agte, Vaishali Vilas. Sparing effect of certain non-essential amino acids over the requirements of essential amino-acids in a marginally subsisting population with special reference to preschool children. University of Poona.
2. Amirtha, N. Kinetics of the addition of iodine monochloride to olefins in solution. University of Madras.
3. Balse, M. N. Tetrahydrobenzothiazoles of pharmacological significance. Karnatak University.
4. Dasgupta, Archana. Theoretical studies on non-benzenoid hydrocarbons. University of Calcutta.
5. Doke, Sham Narayan. Involvement of lysosomal enzymes in fish spoilage. University of Poona.
6. Duhan, S. P. S. Application of nitrogen and growth affecting chemicals on the productivity and quality of essential oil of *Mentha piperita* Linn. Kumaun University.
7. Gajinder Paul. Kinetics and mechanism of solidification from binary system. University of Jammu.

8. Gopalan, S. Studies on buffalo casein. University of Madras.

9. Jadhav, Prabhakar Kondaji. Studies in sesquiterpenes: Newer aspects of longifolene. University of Poona.

10. Jain, Rakesh Kumar. Chemical studies of some naturally occurring polyphenolics and their derivatives. University of Delhi.

11. Kale, Madhuri Madhav. Electrical properties of semi-conducting vanadium phosphate glasses. University of Poona.

12. Krishna Reddy, L. Studies on the solvent extraction of lantanoïdes and actinides. Sri Venkateswara University.

13. Kulkarni, Bharati Subhash. Synthesis of terpenes and some transformations of small membered ring compounds. University of Poona.

14. Mahajani, Saroja. Statistical aspects of analysis of organic functional groups. University of Saugar.

15. Mandale, Ananda Balavant. Some studies on the electrical properties of chalcogenide and oxide films. University of Poona.

16. Mohanraj, S. Studies in the chemistry of Natural products: Pyrrolizidine alkaloids of *Heliotropium curassavicum* Linn. University of Madras.

17. Nandi, Jayashree. Molecular forms, comparative structural characteristics and genetic implications of hemoglobins in local wild murines. University of Poona.

18. Nayak, Amalendu. Synthesis and application of heterocyclic compounds. Utkal University.

19. Prasada Rao, Muvvala Sanni. Some studies on the oxalates and analytical chemistry of thallium. Andhra University.

20. Patra, Maheswar. Studies on heterocyclic compounds. Utkal University.

21. Prabhudesai, Arun Vinayak. Chemical synthesis of lipids. University of Poona.

22. Kama Kant. Complexes of cobalt (II), nickel (II) and copper (II) carboxylates with oxygen donors. University of Jammu.

23. Rangadurai, A. Mechanism of oxidation of alcohols and α -amino acids by 1-chlorobenzotriazole. University of Madras.

24. Sankranarayanan, A. S. Chemistry and Pharmacology of Indian medicinal plants. University of Madras.

25. Tribhuwan, Rajanikant Chandrakant. Mechanism of alkaline phosphatase formation in *Escherichia coli* and acid phosphatase formation in *Saccharomyces cerevisiae*. University of Poona.

26. Vasantrao, Karajagi Gururaj. Structural investigations of some metal complexes. Karnatak University.

Earth Sciences

1. Bhattacharyya Nikhilchandra. Nature and origin of the Arkasani granophyres between Kharawan and Kolabira in the Singhbhum District, Bihar. University of Calcutta.

2. Chadha, Satish Kumar. Sedimentological studies of the rock units of the area between Jangal Gali and Salal, Jammu and Kashmir State. University of Jammu.

3. Gergan, Joseph Thsetan. Stratigraphic and tectonic studies on the Indus suture belt between Dras and Kargil. University of Jammu.

4. Parashar, Vishvas Tryambak. Geology of the area around Ammapur and Hunasagi, Gulbarga District, Karnataka State, India. University of Poona.

5. Uppal, Subash Chander. Studies on the hant granites, Baramulla District, Kasmir Himalaya. University of Jammu. Engineering & Technology

1. Balasubramanian, S. A stochastic approach to the analysis of structures subjected to random excitations. University of Poona.

2. Somasundaram, M. V. Short term flow prediction for semiarid watersheds characterised by seasonal rainfall. University of Madras.

BIOLOGICAL SCIENCES

Biochemistry

1. Chattopadhyay, Amitabha. Studies in pigment metabolism in relation to vitiligo. University of Calcutta.

2. Chempakam, B. Metabolism of glycoproteins in relation to Diabetes mellitus. University of Kerala.

3. Jahagirdar, Lalita Venkateshrao. Trace elements and their effect in their deficiency on amino acid catabolizing enzymes. Marathwada University.

5. Sivaramakrishna Pillai, S. Studies on the intestinal phosphatases in experimental diabetes and atherosclerosis in rabbits. University of Madras.

Botany

1. Bhattacharyya, Dipasri. A study of the chromosomal and associated changes in the evolution of some species propagating principally through vegetative means with special reference to those induced by physical agents. University of Calcutta.

2. Ghosh, Parthadeb. Induced mutation and tissue culture in certain legumes. University of Calcutta.

3. Kannabiran, B. Pharmacognostical investigations on some Indian Medicinal plants. University of Madras.

4. Krishnaswamy, Lakshmi. Phytochemical investigations on seeds of *Rhynchosia minima* (Linn) DC. University of Delhi.

5. Mandavgane, Rekha Dilip. Floristic and palynological studies on some plant groups from Western Maharashtra and Goa. University of Poona.

6. Mathew, Abraham. Cytological studies on the South Indian Compositae. University of Kerala.

7. Narasinga Rao, Putcha Srirama Lakshmi. Cytogenetic studies of autotetraploid pearl millet, *Pennisetum typhoides*. Andhra University.

8. Pawar, Tukaram Krishna. Studies on fungi in rhizosphere, phyllosphere and flowers of *Parthenium hysterophorus*, L. with special reference to their biochemical and physiological characters. University of Poona.

9. Somasundram, T. Mitochondriogenesis: Studies with synchronous yeast. Madurai Kamaraj University.

10. Subbarangaiah, Goddam. Studies on autecology of some Gigartinales of the Visakhapatnam Coast. Andhra University.

11. Thanki, Yugeshchandra Jatashankar. Development and structure of some cucurbitaceous fruits. Sardar Patel University.

Zoology

1. Biswas, Bijan Kumar. Studies on spider fauna of Calcutta and vicinity. University of Poona.

2. Gangopadhyaya, Jayasri. Effort of population stress on the histophysiology of avian endocrine organs. University of Calcutta.

3. Gokhale, Vrinda Anant. Studies on the mechanism of action of urethane in the chick embryos cultivated in vitro. University of Poona.

4. Gupta, B. B. Studies on the bionomics and control of the Indian gypsy moth, *Lymantria obfuscata*. Kumaun University.

5. Gupta, Subhash Chander. Karyology of some Jassids (Homoptera: Jassidae). University of Jammu.

6. Katdare, Meena Sharad. Studies on the development of skin of the garden lizard, *Calotes versicolor*. University of Poona.

7. Katdare, Sharad Moreshwar. In vitro studies on the effects of actinomycin D on the morphogenesis of chick embryos in understanding the mechanism of its action. University of Poona.

8. Krupanidhi, S. Studies on the properties of the blood of the garden snail, *Cryptozonena ligulata* (Ferussac) with special reference to aestivation. Sri Venkateswara University.

9. Rama Krishna Rao, Sunkari. Studies on polyclad turbellarians of Visakhapatnam Coast. Andhra University.

10. Rama Seshiah, Movva. Biometric and biochemical studies on the anabantid fishes, *Anabas testudineus* (Bloch, 1795) and *A. oligolepis* (Bleeker, 1885) from Lake Kolleru in Andhra Pradesh. Andhra University.

11. Suri, Surinder Nath. Studies on some aspects of bioenergetics in *Puntius sophore*, Ham. University of Jammu.

12. Wadekar, Gauri Gopal. Effects of cytochalasin H on the developing embryos of frog, *Microhyaia ornata*. University of Poona.

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1. Bhattacharyya, Sibsankar. Physiological studies on the effects of hormones on liver of toad. University of Calcutta.

2. Ghosh, Archana. Influence of gestogen on some brain activity. University of Calcutta.

3. Paliwal, Dinesh Kumar. Studies on *Cryptococcus neoformans* and some allied yeast-like fungi with special reference to their ecology. University of Delhi.

Agriculture

1. Basu, Tapan Kumar. Effect of ethrel and ancymidol on growth and flowering in ornamentals. University of Calcutta.

2. Dasgupta, Malabika. Studies on the viability of wheat, *Triticum aestivum* L. seed. University of Calcutta.

3. Ghoshal, Samir Kumar. Uptake and distribution of major nutrients in crop plants under moisture stress. University of Calcutta.

4. Mandal, Balaidas. Genetical studies in jute, *Corchorus capsularis* and *C. olitorius* in relation to some aspects of productive breeding. University of Calcutta.

5. Mehetre, Subhash Sonyabapu. Studies related to the glandless characters in *Gossypium hirsutum* L cotton, (II) Cytological studies in the genus *Gossypium* L.; and (III) studies on male sterility in *Gossypium hirsutum* L. cotton. Mahatma Phule Krishi Vidyapeeth.

6. Singh, Anil Kumar. Dissipation of disulfoton and

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1. Baruah, Prafulla Kumar. Studies on some aspect of *Neoschistosomum vitulorum* infection in buffalo calves. Haryana Agricultural University.

2. Basak, Dipak Kumar. Studies on the pathology of premature and mature amphistomes in cattle, buffalo and goat and their immunological response. University of Calcutta.

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- 3 Reader in Demography—Economics
- 4 Lecturer in Agricultural Economics—Economics
- 5 Reader in Sociology—Sociology
- 6 Reader in Cultural Anthropology—Sociology
- 7 Professor (with specialization in Commercial Law)—Law
- 8 Professor—Law
- 9 Reader—Law
- 10 Reader—Law
- 11 Professor—Theoretical Physics—Physics
- 12 Sir Dorabji Tata Reader in Pharmaceutical Chemistry — Chemical Technology
- 13 Reader in Chemical Engineering—Chemical Technology
- 14 Singhanee Lecturer in Chem. Engg.—Chemical Technology
- 15 Lecturer in Food Technology—Chemical Technology

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Professor—Rs. 1500-60-1800-100-2000-125/2-2500

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Lecturer—Rs 700-40-1100-50-1600.

All posts carry the benefits of Dearness Allowance, House Rent Allowance and Compensatory Local Allowance at the rates sanctioned by the Executive Council from time to time. All posts also carry the benefits of the University Provident Fund. A higher starting pay may be given to a person possessing high qualifications. The appointments to the posts will be on probation for two years but the probationary period may be reduced by the Executive Council in special cases. Other things being equal preference will be given to candidates from backward classes. The posts of Lecturer are reserved for candidates belonging to scheduled castes and scheduled tribes and will be filled up by appointment of such persons only as shall satisfy the requirements regarding qualifications, experience etc. laid down for the posts, provided, however, that if no candidate is available from the scheduled castes and scheduled tribes, the posts will be filled up by appointment of duly qualified persons from among the other candidates.

The minimum qualifications prescribed for the posts, other than the posts at serial numbers 12 to 15 in the Univer-

sity Department of Chemical Technology, are as under:

Professor

An eminent scholar with published work of high quality, actively engaged in research. Ten years' experience of teaching and/or research. Experience of guiding research at doctoral level.

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge.

Reader

Good academic record with a doctoral degree of equivalent published work. Evidence of being actively engaged in (i) research or (ii) innovation in teaching methods or (iii) production of teaching materials.

About five years' experience of teaching and/or research provided that at least three of these years were as Lecturer or in an equivalent position. This condition may be relaxed in the case of candidates with outstanding research work.

Lecturer

(a) A Doctors' degree or research work of an equally high standard; and

(b) Consistently good academic record with 1st or high 2nd class (B in the seven point scale) Master's degree in a relevant subject or an equivalent degree of a foreign University.

Having regard to the need for developing interdisciplinary programmes, the degrees in (a) and (b) above may be in relevant subjects.

The Executive Council may relax any of the qualifications prescribed in (b) above provided that the selection committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard.

If a candidate possessing a Doctor's degree or equivalent research work is not available or is not considered suitable, the Executive Council may appoint a person possessing a consistently good academic record (weightage being given to M.Phil. or equivalent degree or research work of quality) provided he has done research work for at least two years or has practical experience in a research laboratory/organisation on the condition that he will have to obtain a Doctor's degree or give evidence of research work of equivalent high standard within five years of his appointment, failing which he will not be able to earn future increments until he fulfils these requirements.

Explanation

Candidates for being eligible for recruitment to the posts of Lecturer must have 1st or high 2nd class (B in the seven point scale) at the Master's level and for determining consistently good academic record, average of 50-55

per cent marks may be expected at the two examinations prior to the Master's examination.

The additional qualifications prescribed for the posts at serial numbers 1 to 11 mentioned above are as under:

1. Reader in General Economics—Specialization in Economic Theory, Fiscal and Growth Economics.
2. Reader in Econometrics—Specialization in Econometric Theory and Applied Econometrics and/or Mathematical Economics. Preference will be given to a candidate with a good back-ground in Economics-Statistics.
3. Reader in Demography—Specialization in Economic Demography, Population Problems and Technical-Demography.
4. Lecturer in Agricultural Economics: Specialization in Agricultural Economics. Preference will be given to a candidate having some field experience.
5. Reader in Sociology—Doctoral degree or equivalent published work must be in Sociology. Experience of guiding students in research.
6. Reader in Cultural Anthropology—Doctoral degree or equivalent published work must be in Cultural or Social Anthropology. Experience of guiding students in research.
7. Professor (with Specialization in Commercial Law)—Teaching experience of ten years must be at the post-graduate level. Professional experience can be considered as equivalent to teaching or research experience.
8. Professor (Law)—Specialization in Jurisprudence and/or Criminal Law. Teaching experience of ten years must be at the post-graduate level. Professional experience can be considered as equivalent to teaching or research experience.
9. Reader (Law)—Specialization in Criminal Law and/or Constitutional Law. Professional experience can be considered as equivalent to teaching or research experience.
10. Reader (Law)—Specialization in Law of Taxation and/or Labour Law. Professional experience can be considered as equivalent to teaching or research experience.
11. Professor of Theoretical Physics—Independent research work of recognized merit in the area of Theoretical Physics and experience of teaching post-graduate classes. Aptitude for doing theoretical work relating to the

experimental research programme of the Department is desirable.

The minimum qualifications prescribed for the posts at serial numbers 12 to 15 in the University Department of Chemical Technology are as under:

12. Sir Dorabji Tata Reader in Pharmaceutical Chemistry

- a) A doctorate degree with specialization in non-analytical aspects of Pharmaceutical Chemistry or Organic Chemistry in addition to the following:
First Class at B.Sc. (Tech.) (Pharmaceuticals)

Or

First Class at B.Pharm. and M.Pharm by research

Or

First Class at M.Pharm. by papers with specialization in Pharmaceutical Chemistry.

Or

First Class at M.Sc. in Organic Chemistry with specialisation in Drugs.

- b) Post-doctoral research work of high quality in non-analytical aspects of Pharmaceutical Chemistry or Organic Chemistry preferably involving routine use of NMR.
- c) Thorough knowledge of Reaction Mechanisms and stereochemistry with reference to Drugs and Intermediate as well as command over the use of modern tools with emphasis on NMR and Mass Spectroscopy.
- d) Evidence of being actively engaged in (i) research or (ii) innovation in teaching methods or (iii) production of teaching materials.
- e) About five years' experience of teaching and/or research provided that at least three of these years were as Lecturer or in an equivalent position. This condition may be relaxed in the case of candidate with outstanding research work.

13. Reader in Chemical Engineering

- a) An outstanding academic record and a basic degree in Chemical Engineering as well as a Doctorate degree. Research publications in journals of international standing. At least five years' research/professional experience.
- b) Specialization in Chemical Reaction Engineering with specific reference to Industrial Catalysis or Reactor Modelling and Design or Mass Transfer with specific reference to interaction between Hydrodynamics and Mass transfer, characteristics of fluid-fluid contractors.

14. Singhane Lecturer in Chemical Engineering

- a) A good academic record with a doctorate degree in Chemical Engineering

Or

A good academic record with first or high second class Master's degree in Chemical Engineering or an equivalent degree with at least one years' research or professional experience.

- b) Specialization in the field of mass transfer/fluid mechanics/instrumentation and process control will be desirable.

15. Lecturer in Food Technology

Essential

- a) A good academic record with first class Bachelor's degree in Food Technology.
- b) First or high second class Master's degree in Food Technology.

Desirable

- a) A Doctorate degree in Food Technology or research work of high standard.
- b) Experience of teaching graduate classes in Food Technology.
- c) Industrial experience of one or two years.

Eight copies of the application, in the prescribed form, should be sent in an envelope superscribed with "Application for the post of———" so as to reach the Registrar (Teaching Appointments Unit), University of Bombay, Bombay-400032, on or before 10th August, 1979. Candidates from abroad, Andaman & Nicobar Islands and Lakshadweep may send their applications so as to reach the Registrar on or before 24th August, 1979. Applications received after the last date will not be considered. Prescribed forms of application can be had, free of charge, from the Teaching Appointments Unit, Registrar's Office, (Room No. 110), University of Bombay, Fort, Bombay-400032.

Requests for supply of forms by post should be made sufficiently in advance.

Candidates should send with every application a crossed Indian Postal Order or a crossed Demand Draft on a scheduled bank for Rs. 10/- drawn in favour of the Registrar, University of Bombay, Bombay, payable at Bombay, as application fee. Candidates who apply for more than one post should send separate applications along with the requisite fee by means of a crossed Indian Postal Order/Demand Draft. Money orders or cheques or cash will not be accepted by the University. The fee will not be refunded once an application has been received by the University.

Incomplete applications and applications without the requisite fee will not

be considered. Applications on plain paper will not be considered.

Candidates are advised to satisfy themselves before applying that they possess the prescribed qualifications and it is for the candidates themselves to ensure that they possess the prescribed qualifications. No enquiry asking for advice as to eligibility will be entertained.

Candidates called for interview will have to present themselves at their own expenses.

Canvassing, direct or indirect, will be a disqualification.

P. S. Sawant
OFFG. REGISTRAR

**BIDHAN CHANDRA KRISHI
VISWA VIDYALAYA
P.O. MOHANPUR, WEST BENGAL
CORRIGENDUM**

In respect of Advertisement No. APPTT/5/79 for post at 'B'—Professor of Agricultural Engineering (One post) qualifications should read as Qualifications: Essential: i) Consistently good academic record with first or high second class Master's Degree or recognised equivalent qualification in Agricultural Engineering with specialisation in Farm Machinery & Power/Process Engineering/Soil & Water Engineering following a good Bachelor's Degree in Agricultural/Mechanical/Civil Engineering; ii) A Doctoral Degree in Agricultural Engineering at (i);

(iii), (iv), (v) & other conditions will however remain unchanged.

A. K. Mitra
REGISTRAR (Actg.)

**ALL INDIA INSTITUTE OF
MEDICAL SCIENCES**

**ANSARI NAGAR, NEW DELHI-16
Advertisement No. 2/79-Estt.-I.**

Applications will be received by the Director, All India Institute of Medical Sciences, Ansari Nagar, New Delhi-16 from the Indian citizens upto the 16th August, 1979 on the prescribed forms available on request for the following temporary posts.

1. Professor: One for Anatomy.

Pay: (i) Rs. 2400-100-2500/125/2-3000 inclusive of N.P.A. for medical officers.

(ii) Rs. 1500-60-1800-100-2000-125/2-2500 for non-medical Officers.

Note:— For the post of Prof. of Anatomy both medical and non-medical candidates will be considered.

2. Associate Professor: One each

(i) Cardiology (ii) Dermatology (iii) Medicine (iv) Neuro-Surgery.

Pay: Rs. 2000-75-2525 inclusive of N.P.A.

3. Assistant Professor: One each for
(i) Anatomy (ii) Anaesthesiology (iii) Forensic Medicine (iv) Neurology (v) Pathology (vi) Two each for Obst. & Gynaecology (vii) Ophthalmology for Dr. R. P. Centre for Ophthalmic Sciences and (viii) Cardiology (including one for Cardio-thoracic Centre).

Pay: (i) Rs. 1700-60-2060 inclusive of N.P.A. for medical officers.

(ii) Rs. 1200-50-1300-60-1600 for non-medical officers.

Note:—For the post of Asstt. Prof. of Anatomy both medical and candidates non-medical will be considered.

4. Lecturer: One each for

(i) Biophysics (ii) Cardiology (iii) Microbiology (iv) Pharmacology (v) Nuclear Medicine (vi) Orthopaedics (vii) Forensic Medicine (viii) Ocular Biochemistry for Dr. R. P. Centre for Ophthalmic Sciences (ix) Paediatrics Surgery and (x) Three for Medicine.

Pay: (i) Rs. 1400-60-1760 inclusive of N.P.A. for medical officers.

(ii) Rs. 700-40-1100-50-1600 for non-medical officers.

Note:

(i) For the post of Lecturer in Biophysics, Microbiology, Pharmacology, Nuclear Medicine and Ocular Biochemistry both medical and non-medical candidates will be considered.

(ii) The Post of Lecturer in Forensic Medicine is sanctioned for the Post Mortem Project financed by the Delhi Administration temporarily for the duration of the project.

(iii) The posts of Lecturer in Microbiology and Paediatrics Surgery are on leave vacancy for a period of one year.

5. Senior Research Officer (Cytopathology): One

Pay: Rs. 1100-50-1600 plus N.P.A.

6. Dietician (Metabolic): One

Pay: Rs. 650-30-740-35-810-EB-35-880-40-1000-EB-40-1200.

7. Electronic Engineer: One (For Neuro-Sciences Centre)

Pay: Rs. 650-30-740-35-810-EB-35-880-40-1000-EB-40-1200.

8. Librarian Selection Grade: One

Pay: Rs. 1100-50-1600.

9. Chief Technical Officer: One (For Central Workshop)

Pay: Rs. 1100-50-1600.

10. Health Educator: One

(Reserved for S/tribes candidates. In case of non-availability of suitable S/tribes candidates, the post would be treated as unreserved and selection will be made from amongst other candidates).

Pay: Rs. 550-25-750-EB-30-900.

Note

The incumbent of the post of Health Educator will be required to stay at rural Health Centre Ballabgarh.

11. Junior Research Officer: One, each for (i) Cardiology and (ii) Biostatistics.

Pay: Rs. 650-30-740-35-800-EB-40-950 plus N.P.A. for medical officers only.

12. Chemist (Biochemistry): One

(Reserved for S/Tribes candidates)

Pay: Rs. 650-30-740-35-810-EB-35-880-40-1000-EB-40-1200.

13. Publication-cum-Public Relation

Officer: One

Pay: Rs. 1100-50-1600.

Note

The upper age limit for this post is 45 years.

14. Nursing Superintendent: One

(For Dr. Rajendra Prasad Centre for Ophthalmic Sciences).

Pay: Rs. 700-40-900-EB-40-1100-50-1300.

15. Laundry Mechanic: One

(Reserved for S/Castes candidates)

Pay: Rs. 260-6-326-EB-8-350.

Upper age limit

50 years for teaching post and 30 years for non-teaching posts relaxable for Government servants, scheduled castes and Scheduled Tribes candidates or otherwise exceptionally qualified candidates.

Note: The essential qualifications are relaxable at the discretion of the Selecting Authority.

Application form and detailed information sheets can be obtained either personally or on written requests accompanied by a self addressed stamped (0.55 paise) envelope (23 cm x 8 cm.)

PANJAB UNIVERSITY CHANDIGARH

Advertisement No. 13/79

The Vice-Chancellor will be glad to correspond with eminent scholars who have won recognition and published meritorious work in the field of Vedic Literature and Culture for appointment as Professor in Dayanand Chair for Vedic Studies. This is a tenure appointment for a period of three years in the first instance. The post will be in the grade of Rs. 1500-60-1800-100-2000-125/2-2500 with other ancillary benefits.

Those interested are required to write to the Vice-Chancellor enclosing their bio-data with a list of their published work by 7.8.1979.

OSMANIA UNIVERSITY HYDERABAD-500 007 (A.P.)

Advertisement No. 11/79

Applications, in the prescribed forms together with the registration fee of Rs. 5/-. are invited for the following posts in the University service, so as to

reach the undersigned on or before 10th August, 1979.

Post & Specialization

Professor of Electrical Engineering—Power System Engineering with special emphasis on E.H.T.

Lecturer in Mechanical Engineering—Heat power/Machine design/Production Engineering / Industrial Engineering / Refrigeration and Airconditioning/Welding.

Scale of Pay

Professor—Rs. 1500-60-1800-100-2000-125/2-2500

Lecturer—Rs. 700-40-1100-50-1600

Age

Professor—Not above (50) years

Lecturer—Not above (35) years

(i) Age limit does not apply to the employees of this University.

(ii) Relaxation in age to the extent of five years may be granted to candidates belonging to SCs., STs., and BCs., for the posts of Lecturers only.

(iii) Age relaxation can be considered in deserving cases.

14%, 4% and 25% reservations are made for Scheduled Castes, Scheduled Tribes and Backward Classes respectively only in the case of Lecturers.

Note

Candidates who have submitted their dissertation/thesis and awaiting the results can also apply for the post of Lecturers in Mechanical Engineering.

Application forms can be had from the Director, Department of Publications and University Press, Osmania University, Hyderabad-500 007, A.P. (India) on payment of Rs. 4-50 in person or by money order or by a postal order UNCROSSED made payable to the Director, University Press, O. U. by sending a self-addressed envelope (11½ x 16½ cms.) duly stamped for ordinary or registered post.

Full particulars can be obtained on requisition from the Director, Osmania University Press, free of cost, by sending a self-addressed stamped envelope.

B. Ramchandra Reddy
REGISTRAR

It Pays
to
Advertise
in
University News

JAMIA MILLIA ISLAMIA

Jamianagar, New Delhi-110025

Advt. No. 6/79 80

Applications on the prescribed form which can be had from the Registrar's Office on any day (except Sunday and Holidays) between 10:00 a.m. to 12:00 Noon or by sending a self-addressed and duly stamped (30 paise) envelope of 10×23 cms., are invited along with the postal order of Rs. 3/- for the following posts so as to reach the Registrar by 1:00 p.m. on August 1, 1979.

Ability to teach in Urdu and Hindi is a desirable qualification.

D.A., C.C.A., H.R.A., P.F., Gratuity, Pension etc. and such other benefits will be given according to Jamia rules.

Relaxation in any of the qualifications may be made on the recommendation of the Selection Committee in exceptional cases.

Principal, Teachers' College (Grade: Rs. 1500-2500) likely to be converted into the post of Professor of Education, Department of Teachers' Training and Non-Formal Education.

A scholar of eminence. Independent published work of high standard, experience of teaching post-graduate classes and guiding research for a considerable period as well as experience of organising Teachers' Training and non-formal education desirable.

Two Professors (Grade: Rs. 1500-2500); one each in History (permanent) and Education (leave vacancy).

A scholar of eminence. Independent published work of high standard, experience of teaching post-graduate classes and guiding research for a considerable period desirable.

For Professorship of History specialization in Medieval Indian History desirable.

Four Readers (Grade: Rs. 1200-1900); one each in Islamic Studies, Psychology Social Work (permanent) and one in Social Work (leave vacancy).

Good academic record with a first or high second class Master's Degree of an Indian University or an equivalent foreign qualification; a Doctorate Degree or equivalent published work in the subject concerned, and independent published work of a high standard in addition to the published work referred to above and at least 5 years experience of teaching Hons./Post-graduate classes or 10 years' experience of teaching undergraduate classes.

For the post of Reader in Islamic Studies good knowledge of Arabic language with specialisation in Islamic Religion, Philosophy, Jurisprudence, Islamic History or World Religions would be a desirable qualification.

For the post of Reader in Psychology, specialization in Social Psychology would be a desirable qualification.

For the post of Reader in Social Work, experience in teaching/training in Applied Social Sciences projects would be a desirable qualification.

Reader in Art & Craft Education (Grade: Rs. 1200-1900).

Essential

1. A first or high second class Master's Degree or National Diploma or equivalent Degree/Diploma in Art.
2. Five years experience in teaching of

University level.

3. Experience of research work or professional eminence as an artist with participation in National/International level Art Exhibitions.

Five Lecturers (Grade: 700-1600); One each in Social Work, Modern Indian History, Chemistry, English and Political Science (leave vacancies).

- (a) A Doctor's degree or research work of an equally high standard in the relevant subject; and

- (b) Consistently good academic record with 1st or high 2nd class Master's degree in the relevant subject or an equivalent degree of a foreign university.

For the post of Lecturer in Social Work experience in teaching/training in Applied Social Sciences projects would be a desirable qualification.

Lecturer in Education (Commerce) Grade: Rs. 700-1600

- (a) A Doctor's degree in Education or research work of an equally high standard; and

- (b) Consistently good academic record with 1st or high 2nd class Master's degree in Commerce or an equivalent degree of a foreign university.

OR

- (a) A Doctor's degree in Commerce or research work of an equally high standard; and

- (b) Consistently good academic record with an M.Phil degree in Education or an equivalent degree of a foreign university.

Lecturer in Art Education (Sculpture/Ceramics, Pottery & Clay Modelling) Grade: Rs. 700-1600.

Essential

- (1) At least high second class Higher Secondary or its equivalent. (2) At least high second class Diploma in Fine Arts of 4 or 5 years duration from a recognised Art Institution or its equivalent Diploma from a foreign university.

Desirable

- (3) At least two years of teaching experience. (4) At least high second class B.Ed.(Art) or equivalent Professional training. (5) Professional standing as an artist with one-man shows and participation in National and International exhibitions.

Zamir Hasan

OFFG. REGISTRAR

UNIVERSITY OF JABALPUR JABALPUR ADVERTISEMENT

No. Estt./79/1030

4th July, 1979

Applications are invited on plain paper for the following posts in the scales shown against each with benefits of dearness allowance, Contributory Provident Fund and other allowances as may be admissible under the University rules, viz:

1. Reader

One for Sanskrit (with specialization in Pali and Prakrit).

Pay Scale: Rs. 1100-50-1600.

2. Lecturers—2 posts

One for Physical Chemistry. One for Organic Chemistry.

Pay Scale: Rs. 620-40-900-50-1400.

Essential Minimum Qualifications

For Reader

- (a)(i): A doctor's degree or published work of an equivalent high

standard and;

- (b)(i): A 2nd Class Master's degree in a relevant subject with atleast 50% marks (B in the seven point scale) or an equivalent degree of a foreign University; and

N.B. While taking into account the marks/grade, the marks/grade obtained in Internal assessment, if any, shall be excluded, (ii) At least 50% marks at the Bachelor's degree examination on the basis of which division is awarded at the degree level by the University; and

(iii) Atleast 60% marks at the Higher Secondary/Intermediate/Pre-University Examination, as the case may be;

and

- (c)(i) The experience of teaching post-graduate classes for atleast 5 years; and

- (ii) Atleast three years' experience of guiding research.

For Lecturers

- (a)(i): A doctor's degree or published work of an equivalent high standard; and

- (b)(i): A 2nd Class Master's degree in a relevant subject with atleast 50% marks (B in the seven point scale) or an equivalent degree of a foreign University; and

N.B. (While taking into account the marks/grade, the marks/grade obtained in internal assessment, if any, shall be excluded).

(ii) Atleast 50% marks at the Bachelor's degree examination on the basis of which division is awarded at the degree level by the University, and

(iii) Atleast 50% marks at the Higher Secondary/Intermediate/Pre-University Examination, as the case may be.

Having regard to the need for developing into disciplinary programmes the degree in (a)(i) and (b)(i) above may be in relevant subjects.

N.B.: (i) The requirement regarding minimum percentage of marks shall be relaxed upto 5% in case of scheduled castes/scheduled tribe candidates.

- (ii) The posts of lecturer in Physical Chemistry and Reader in Sanskrit are temporary for the present.

Qualifications are relaxable in cases of candidates of exceptional merit. The candidates in their applications should give details of their 'specialization'. Canvassing in any form by or on behalf of the candidate will disqualify him.

The applications showing the details of qualifications stated above along with the information regarding the proof of the date of birth and past experience accompanied with a Postal Order for Rs. 5/- in the name of the undersigned should reach here not later than 13th August, 1979. The candidates already in employment at present, should send their applications through proper channel.

R. N. Tripathi
REGISTRAR

A.I.U. PUBLICATIONS

	(Rs.)
1. Universities Handbook—1979	150.00
2. Association of Indian Universities—History	50.00
3. Higher Education and Development	30.00
4. University Finance—A Statistical Profile	50.00
5. Enrolment in Higher Education—A trend analysis	20.00
6. Resource Allocation on Education—Research Studies	20.00
7. Researches in Economics of Education—India	10.00

Bibliography of Doctoral Dissertations

8. Social Sciences & Humanities—1970-75	150.00
9. Social Sciences & Humanities—1975-76	50.00
10. Social Sciences & Humanities—1976-77	70.00
11. Natural & Applied Sciences—1975-76	90.00
12. Natural & Applied Sciences—1976-77	120.00
13. Social Sciences	50.00
14. Humanities	100.00
15. Physical Sciences	125.00
16. Biological Sciences	100.00

1857-1970

Note : Also available in paperbacks in individual discipline

On Examinations

17. Management of Examinations	35.00
18. Towards Better Questions	5.00
19. Monograph on Grading	5.00
20. Monograph on Question Banking	5.00
21. Monograph on Internal Assessment	6.00
22. Monograph on Test & Item Analysis	10.00
23. Monograph on Question Banking in English	
Language & Literature	6.00
24. Monograph on Practical Examinations	9.00
25. Monograph on Semester System	14.00
26. Research Abstracts—Parts I, II & III	each 6.00

Question Bank Book Series

27. Mathematics	35.00	34. Psychology	25.00
28. Physics	20.00	35. Economics	25.00
29. Chemistry	30.00	36. Commerce	25.00
30. Zoology	25.00	37. Political Science	22.00
31. Botany	20.00	38. Foods & Nutrition	25.00
32. History	15.00	39. Sociology	30.00
33. Geography	15.00		

Sports & Physical Education

40. Handbook of Rules & Regulations for	
Inter-University Tournaments	7.50
41. Gymnastic Exercises for Men	5.00
42. Gymnastic Exercises for Women	5.00

Address enquiries to

Association of Indian Universities

Rouse Avenue, New Delhi-110002

University News

FORTNIGHTLY CHRONICLE OF HIGHER EDUCATION & RESEARCH SEPTEMBER 1, 1979

- **Plugging Wastage in Medical Education**
- **Education through Correspondence**
- **Workshop on Examination System**
- **Uniform Fee in Maharashtra Varsities**
- **Examination and Employment**
- **Meaningful Guidance to Students**
- **Restructuring of Medical Education**
- **College Development Council**
- **Restructuring of Educational System**

UNIVERSITY OF BOMBAY BOMBAY

Applications are invited in the prescribed form for the following posts in the University :

Post/s	Department
1. Reader (temporary for period not exceeding 30th June, 1983)	History
2. Two Readers	Computer Science
3. Two Lecturers	

The pay-scales of the posts are :
Reader : Rs. 1200-50-1300-60-1900.
Lecturer : Rs. 700-40-1100-50-1600.

All posts carry the benefits of Dearness Allowance, House Rent Allowance and Compensatory Local Allowance at the rates sanctioned by the Executive Council from time to time. All posts, except the temporary post at serial No. 1, carry the benefits of the University Provident Fund. A higher starting pay may be given to a person possessing high qualifications. The appointments to the posts, except the temporary post at serial No. 1, will be on probation for two years but the probationary period may be reduced by the Executive Council in special cases. Other things being equal preference will be given to candidates from backward classes. The posts of Lecturer are reserved for candidates belonging to scheduled castes and scheduled tribes and will be filled up by appointment of such persons only as shall satisfy the requirements regarding qualifications, experience etc. laid down for the posts, provided, however, that if no candidate is available from the scheduled castes and scheduled tribes, the posts will be filled up by appointment of duly qualified persons from among the other candidates.

The minimum qualifications prescribed for the posts are as under :

Reader

Good academic record with a doctoral degree or equivalent published work. Evidence of being actively engaged in (i) research or (ii) innovation in teaching methods or (iii) production of teaching materials.

About five years' experience of teaching and/or research provided that at least three of these years were as Lecturer or in an equivalent position. This condition may be relaxed in the case of candidates with outstanding research work.

Lecturer

(a) A Doctor's degree or research work of an equally high standard; and

(b) Consistently good academic record with 1st or high 2nd class (B in the seven point scale) Master's degree in a relevant subject or an equivalent degree of a foreign University.

Having regard to the need for developing inter-disciplinary programmes, the degrees in (a) and (b) above may be in relevant subjects.

The Executive Council may relax

any of the qualifications prescribed in (b) above provided that the selection committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard.

If a candidate possessing a Doctor's degree or equivalent research work is not available or is not considered suitable, the Executive Council may appoint a person possessing a consistently good academic record (weightage being given to M. Phil. or equivalent degree or research work of quality) provided he has done research work for at least two years or has practical experience in a research laboratory/organisation on the condition that he will have to obtain a Doctor's degree or give evidence of research work of equivalent high standard within five years of his appointment, failing which, he will not be able to earn future increments until he fulfils these requirements.

Explanation

Candidates for being eligible for recruitment to the posts of Lecturer must have 1st or high 2nd class (B in the seven point scale) at the Master's level and for determining consistently good academic record, average of 50-55 per cent marks may be expected at the two examinations prior to the Master's examination.

The additional qualifications prescribed for the posts are as under :

- 1. Reader (History) :**—Experience of teaching and/or research must be at the Post-graduate level in Modern India and Indian Renaissance/Practice of History/Evolution of Commonwealth.
- 2. Two Readers (Computer Science)**
Doctoral degree or equivalent published work must be in Computer Science or related areas. Adequate research and/or academic experience involving utilization of large computer systems and some teaching experience will be desirable.
- 3. Two Lecturers (Computer Science)**
At least two years' experience of teaching or working in a research and development area related to computer science will be desirable.

Eight copies of the application, in the prescribed form, should be sent in an envelope superscribed with "Application for the post of _____" so as to reach the Registrar (Teaching Appointments Unit), University of Bombay, Bombay 400 032, on or before 4th October, 1979. Candidates from abroad, Andaman & Nicobar Islands and Lakshadweep may send their applications so as to reach the Registrar on or before 18th October, 1979. Applications received after the last date will not be considered. Prescribed forms of application can be had, free of charge, from the Teaching Appointments Unit, Registrar's Office, (Room No. 110), University of Bombay, Fort, Bombay-400032.

Requests for supply of forms by post

should be made sufficiently in advance.

Candidates should send with every application a crossed Indian Postal Order or a crossed Demand Draft on a scheduled bank for Rs. 10/- drawn in favour of the Registrar, University of Bombay, Bombay, payable at Bombay, as application fee. Candidates who apply for more than one post should send separate applications along with the requisite fee by means of a crossed Indian Postal Order/Demand Draft. Money orders or cheques or cash will not be accepted by the University. The fee will not be refunded once an application has been received by the University.

Incomplete applications and applications without the requisite fee will not be considered. Applications on plain paper will not be considered.

Candidates are advised to satisfy themselves before applying that they possess the prescribed qualifications and it is for the candidates themselves to ensure that they possess the prescribed qualifications. No inquiry asking for advice as to eligibility will be entertained.

Candidates called for interview will have to present themselves at their own expenses.

Canvassing, direct or indirect, will be a disqualification.

P.S. Sawant
Offg. REGISTRAR

UNIVERSITY OF KERALA TRIVANDRUM No. Ad. D. 11.2-2269/79 NOTIFICATION

Applications are invited from qualified candidates for appointment as Reader in Chemistry in the University Department of Chemistry, Trivandrum in the scale of Rs. 1125-1725.

Appointments will be made in accordance with section 6, sub section 11 of Chapter II of the Kerala University Act 1974. Accordingly the post is reserved for members of Ezhava Community. If no candidate from this community is found suitable applicants from other reserved communities will be considered in accordance with the rule relating to communal rotation. In the absence of suitable candidates from any of the reserved communities, the post will be treated as open.

The details of qualifications, age etc. and application forms can be had from the Deputy Registrar (Administration) University of Kerala, Trivandrum on production of a receipt for Rs. 2/- (Rs. two only) from the State Bank of Travancore or crossed Postal Order drawn in favour of the Finance Officer, University of Kerala, Trivandrum specifying the post for which application forms are required.

The last date fixed for receipt of application is 15-9-1979.

C.K. Devassy
REGISTRAR

UNIVERSITY NEWS

Vol. XVII SEPTEMBER 1
No. 17 1979

A Fortnightly Chronicle of Higher Education Price
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Opinions expressed in the articles and reviews are individual and do not necessarily reflect the policies of the Association

Hony. Editor : ANJNI KUMAR

Examination and Employment

H. S. Srivastava*

Basically, examinations were instituted for realising the purposes of valid and reliable evaluation and of acting as instruments for improving teaching and learning. But the traditional educational strategies have only concentrated on the former of these at the cost of the latter.

In this background, examinations have performed the narrow function of only attempting to identify and declare the level of academic performance of the students through grading, classification and certification, in respect of the courses in question. In course of time, however, these 'examination seals' also started being misused through an omnibus use of the same for ends, which these examinations were never originally expected to serve. One prominent misuse of the results of academic examinations was for purposes of professional selection. Today in some situations they are the sole criteria of selection whereas in others they are taken as pre-requisites for the same.

This abuse, of the use of the results of academic examinations for purposes of professional selection, also unfortunately had a boomerang effect. It exerted in turn an undesirable influence not only on the content but also on the process of education.

Furthermore examinations have also played a negative role in the game of selections by attempting to accomplish this function through the medium of 'elimination'. Thus for selecting people they have looked at 'disqualities' rather than 'qualities'. In fact, in the maze of the situation that so emerged, examination results were used for dropping out those who possessed the largest number, degree and kinds of handicaps with a view to selecting the residuals, as qualified, capable and proficient. They should rather have gone about their business (if at all they had to), the other way round by looking for strengths of individuals and testifying them.

It is also surprising in this situation that while several employers consider examination results as a very poor and inappropriate yard-stick for predicting professional effectiveness and efficiency, they are apparently unwilling to give up their use for purposes of selection for jobs. On the other hand, they also tend to succumb to the administrative convenience of encouraging a continuous qualification hike for filling in professional vacancies. They try to explain away their former tendency to the absence of an alternative and the latter to the need for a process of elimination in view of the growing pressure on available jobs and the availability of more

(Continued on page 455)

*Professor, NCERT, New Delhi.

Plugging Wastage in Medical Education

M. R. Goyal*

1. Existing Position

1.1 Our country has witnessed a phenomenal growth in the number of medical institutions in the country after the attainment of Independence. For instance the number of medical colleges in the country increased from 25 in 1947 to 106 in 1978 with an annual admission capacity of over 13,000 students. Likewise the number of qualified doctors has increased from 47,000 in 1946 to over 1,54,000 with a doctor population ratio of 1:3900 as today. In spite of our concerted efforts in the direction of increasing the medical manpower our targets still fall short of achieving a doctor population ratio of 1:3300 as set by the Mudaliar Committee Report as far back as 1962.

1.2. Let us have a look at the percentage of expenditure on health during the course of various Plan period which is given as under :

Years	Allocation on Health (in crores)	Total Allocation	Percentage
1st Plan 1951-56	65.20	1960	3.3
2nd Plan 1956-61	140.80	4672	3.0
3rd Plan 1961-66	225.90	8576.50	2.6
Annual Plan 1966-69	140.20	6625.40	2.1
4th Plan 1969-74	335.5	15778.80	2.1
5th Plan 1974-79	681.66	39303.20	1.7

From the above it is evident that the percentage allocation on health to that of the total plan allocation has been decreasing steadily. Looking to the allocation on the Medical Education there is an allocation of 91.91 crores in the 5th plan period which is nearly 13% of the total allocation of Rs. 661.66 crores on Health in the 5th Plan period. But in the previous plan allocations the percentage expenditure on medical education has ranged between 15-19%. In terms of percentages the expenditure on medical education has been by far the least in our present plan period. It is therefore, implied that the plan allocation may not envisage any further expansion of Medical Education which may only sustain improvement efforts. Consequently it is imperative that we

should make judicious use of scarce resources which have been made available to us in the existing plan periods in the field of medical education and research, and should plug every loophole that may exist. It is therefore important that both for the purposes of expansion and improvement we should raise internal resources by bringing about urgent administrative and curricular reforms.

1.3. Medical Education is probably the costliest form of Education which requires greater inputs in terms of money. Capital costs for starting a medical college alongwith its ancillaries is top heavy. In terms of money and in terms of number of years put in to train a basic doctor, the state cost is nearly Rs. 1,00,000 per doctor, apart from private costs. The duration is 5½ years for the 1st degree medical course which is the lengthiest of all professional degree courses.

1.4. Even in spite of greater inputs in the field of medical education we are not happy with the quality of medical education as the state of affairs in the field of public health is far from satisfactory. Qualitatively it is being felt that medical education continues to be in the moulds of old and traditional British model which has been responsible for creating imbalances in the delivery of health care in the country and have proportionately neglected the health needs of our 80% rural communities. Realizing the situation the fifth plan document has stated that:

“Teaching in medical colleges still requires a radical change. The undergraduate Medical Education would have to be reoriented to the needs of the country and emphasis would have to be placed on community care rather than hospital care. In view of the importance of family planning programmes in the country teaching in various aspects of family planning should form an integral part of education. Consequently a change in the structure of medical education is therefore, called for to meet the changing requirements.”

2. An Imperative

2.1. The scarce resources and dwindling plan allocations on medical education makes a demand on us that the training of medical manpower shall have to be made more fruit bearing and less costly. We shall have to make a direct approach for its improvements by checking wasteful expenditure, if any.

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2.2. The Committee on Medical Education and support manpower set up by the Ministry of Health, Govt. of India for looking into the needs of medical education have also emphasized on the preventive and promotive aspect of community health rather than on curative aspects. It has further suggested for raising a cadre of community health workers to look into the promotional health care of our vast rural populace, because it expressed that the "number of doctors have speedily increased but the alienation of doctors from the rural environments have deprived the rural communities of total medical care".

2.3. Recently the length of medical course have come under fire and scrutiny from among medical educationists. A section of educationists are thinking in terms of including preclinical or basic sciences course in the pre-degree course itself. Such a step they feel will not only shorten the medical course but also will make it more directed and economical. This will also ensure greater emphasis on clinical teaching which is the base and core of all medical teaching. Recently at the All India Institute of Medical Sciences there has been a strong move to integrate the basic sciences course with the clinical course, thereby reducing the length of the MBBS course to a maximum of 5 years, including internship training course without undermining standards of medical education. The future trends of events is still to show its progress and acceptability in the wider context.

2.4. The problem of wastage and stagnation in medical education shall also have to be considered in the light of expenditure involved in such an unproductive channel which can be avoided if we plug its loopholes. Not many studies have been instituted on wastage in medical education. Only a few studies on wastage on medical education have been reported at the state levels. Out of these "students' wastage in Medical Education" conducted by the Institute of Applied Manpower Research (IAMR working paper No. 1/1977) is quite significant as this has been conducted on All India Basis. The study has two component i.e., the study of real wastage or drop outs and the study of time wastage which means the proportion of additional time taken by the pass outs to their normal time which they would have taken. The first is measured in terms of drop outs and the other in terms of stagnation index. The study concludes that the overall real wastage or dropout ratio is 6.0% and the time wastage i.e. stagnation index is of the order of 11.6% as averaged on all India basis.

In order to plug real wastage the study points out that we are reaping the harvest of only 100 medical colleges out of 106 medical colleges in the country. But if we can add to the admission capacity of all colleges 5 to 6% more seats we can perhaps avoid this wastage.

2.5. To the educational planners the stagnation rates are very important which is certainly an edu-

cational waste. This wastage can be tackled by bringing in the increased use of innovative teaching technology and by improving our educational methodology and tools of assessment.

I.A.M.R. study paper reveals for cohort years of 1963-64, 1964-65 and 1965-66 that just about 60 per cent of the students pass the individual MBBS-terms examination in one attempt. However, one fourth of them were able to do so only in the 2nd attempt and the remaining in the third or fourth attempt. It is interesting to note that female students show better results than their counterpart males and the day scholars had a slight edge over the hostel residents.

3. Resolving the Issue

3.1. The wastage in medical education and also the emerging social and specific needs of our country suggests for a change of teaching strategy in our medical institutions whereby we shall have to carry out curricular, methodological and evaluation reforms without further loss of time. Time and again it has been suggested that medical education cells be created in selected medical centres as it would be difficult to sustain and maintain such cells at individual medical colleges in view of its cost and dearth of such methodologists and medical educationists. Although efforts have been continually made to institute education cells at various Institutes in the country but the scheme has not made much headway owing to the non availability of expertise in the field on the one hand and that of inadequacy of funds on the other hand.

3.2. Under the circumstances it will be worth while that the Association of Indian Universities which has influence and membership of all Universities and leading technical and medical institutes in the country may take up this task of revitalizing our medical and technical institutions in the country. We are aware that there is a research and a pedagogical group already working in the field of higher education the expertise of which can be made to play a vital role. This Pedagogical Research Division can be further strengthened to develop it into a medical and technical education centre to serve the needs of entire country. This centre should not only concentrate on the developments of various aids and devices of medical and technical teaching, but should also undertake both short term and long term courses workshops and seminars at regular intervals for the teachers of medical and technical institutions to bring about educational reforms in these fields. Such a step will go a long way not only in plugging of wastage in this costly form of education but, will also enhance the capacities and capabilities of our much needed specialised manpower in the country. The Ministry of Education and UGC are therefore urged to take speedy steps to institute and sponsor such a centre to reform our professional education manpower which is the backbone of all our existing and future economic ventures. □

Education through Correspondence

Z. I. Chaitanya*

The system of imparting education through correspondence will go a long way in the universalisation of education by practically bringing a university to your door-steps. From its beginning a century back, it has made great strides and come to be acknowledged as an educational system of considerable significance in providing necessary facilities to the ever increasing number of aspirants to higher academic and professional excellence. While in the technologically advanced countries, correspondence courses are available in almost all the fields of education, the system is still dragging its feet in a country like India where it can be of great benefit with its great potential. What with the strikes, gheraos, indefinitely postponed examinations and students generally on war path, it would seem that the authorities would have taken some notice of the findings of the Expert Committee on Correspondence Courses and Evening Colleges under the chairmanship of Prof. D.S. Kothari, the great educationist who submitted the report in the early sixties.

The committee had built up a very strong case in favour of the system. It gave only four requisites for its successful implementation viz. literate and interested students; efficient and qualified teachers for the preparation of instructional materials, instructors for personal contact programmes and tutorials; and good postal service. Even a cursory observation will reveal that there is an abundance in the availability of these resources. The report mentions that almost any subject and course can be effectively taught through correspondence as is the case and common practice in quite a few developed countries. As a matter of fact, only the highly complicated and sophisticated subjects would lie outside its scope. A fairly large number of accredited colleges and universities in the United States offer correspondence courses in academic, agricultural, business, engineering, home science, teacher training etc. University of London External Examinations by correspondence attract a large number of students from all over the world. Besides there are various licensing and qualifying examinations through correspondence.

The most interesting feature of correspondence instruction is its economy. Huge resources frittered away on buildings, laboratories, libraries, hostels and staff can be saved. Material painstakingly produced and occasionally revised under efficient supervision of highly qualified staff can be used again and again by an unusually large number of students. While enabling such a vast number of students to study at their leisure, the system effectively weeds out those students who may not be genuinely interested in studies as they are deprived of any opportunity to create trouble or disrupt the studies of others. Exa-

minations need not be post-poned indefinitely nor classes suspended as the interested students will be in a position to offer unstinted support by constantly remaining busy with their studies, projects and answer sheets.

In India, a number of courses through correspondence are offered by many universities. Unluckily these are mostly confined to conventional academic courses like matriculation, intermediate, higher secondary, B.A. and M.A. in various subjects including commerce. There are only a few universities which offer correspondence courses in law and education, and hardly any in technical subjects. There is a crying need for government sponsored and recognised courses through correspondence in different trades like air-conditioning, electronics, mechanical, civil and electrical engineering, commercial subjects, tailoring, watch-repair, agriculture — the scope is practically unlimited—to enable school-leavers and even drop-outs to learn professional and useful trades. As it is, there is a mushroom growth of private institutions offering correspondence courses in some of these trades. These need to be streamlined and brought under the supervision of agencies on the lines of City & Guilds, entrusted to the care of the state governments and advised by a coordinating central agency to maintain national standards. The emphasis should be on the acquisition of practical knowledge. The lessons need to be supplemented by specially designed educational/trade kits containing useful devices like tapes, records, slides, measuring instruments and metres and professional tools. In rotation, batches of students may be given workshop practice at well equipped centres in different areas.

Panjab University, Chandigarh and Himachal Pradesh University, Simla are amongst the pioneer institutions providing instruction through correspondence in higher courses of study. Their popularity can be judged by the large number of the students on their rolls. They attract students from all walks of life besides foreigners. There are about three hundred students preparing for M.A. Public Administration Part II through correspondence from Panjab University. Amongst the students, you will find military and government officials, diplomats, house-wives and others. The students often figure in the list of toppers side by side with the regular students. There is need of offering more professional courses. As it is, admissions are confined to a select few. For instance H.P. University allows only inservice teachers to seek admission to M.Ed. course and Aligarh Muslim University allows only women candidates to seek admission to law as private candidates. It smacks of discrimination as there must be others interested in doing M.Ed. besides inservice teachers and male candidates inte-

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Meaningful Guidance to Students

K. R. Balan*

On giving a fresh look at all the facets of planning, programming, implementation and evaluation in the realm of education, one thing would appear to stand out and that is the need for the orientation of the present pattern of education for the achievement of prosperity and welfare of the masses. The main task waiting to be accomplished is guiding and directing the students in such a manner that they can develop their innate talents to the optimum level and at the same time take up courses which will lead to jobs or professions most needed in a developing country like India.

The leaders of the country have to be increasingly alive to the aspirations of the pupils, their right to get the right type of education from the right teachers at a cost within the reach of the State under conditions which will permit them to reap the reward from the training.

Equality of opportunity does not go hand in hand with identical opportunity. Exceptional pupils must be treated in an exceptional way irrespective of their caste, creed, sex and economic status. There is growing awareness of the need for continuing, lifelong education for a developing society.

One such area of exploratory effort is related to the educational and professional growth of workers employed in various sectors in urban and semi-urban areas. Such workers are educated and skilled capable of propelling themselves on their own provided opportunities are given. And the middle and lower level workers too with innate and proved skills could be spotted out and due encouragement given; for, they would have been forced to discontinue further education due to compelling family circumstances. Such men either continue to stagnate or drop out. This produces a detrimental effect on their work itself.

The inadequate or unsatisfactory response from many pupils is apt to make it almost impossible for teaching to be a pleasure either to the teacher or the taught. In order to identify the subject matter, it needs to be prepared in such a way that, wherever possible, it shows its connection with concrete reality. To-day, the teacher must demand for his pupils a higher level of abstract ability than ever before. He must therefore especially encourage his pupils in this direction. The way to abstraction should however be paved with constant references back to concrete facts. Here it is relevant to emphasise the fact that priority should be not on the imparting of knowledge but on learning and learning how to think. The best learning

is done when the pupils have a clear aim in view. When the learners know what they are supposed to achieve, if they develop clear goal-recognition the learning process is better organised by compartments and stages. Concentration on the goal gives direction and energy to learning.

If the teaching is to be effective, it should be based on the following principles: Information should be presented to pupils in a logical step-by-step sequence; learning should proceed from the known to the unknown; instruction should proceed at the student's own pace; efforts should be made to ensure the student's understanding of each point before he proceeds to the next; misunderstandings should be detected and corrected on the spot; new ideas should be made meaningful in terms of the student's own experience.

It is hoped that with the introduction of the 'ten plus two' system, new objectives in education would be identified and time-bound programmes chalked out to measure and tap the student's potential. Semesterisation and internal assessment by themselves cannot lend support unless the techniques which go into the construction of the apparatus for testing and evaluating are sharpened by effective and dedicated spirit.

(Courtesy : The Hindu)

Examination and Employment

(Continued from page 451)

highly qualified candidates for the jobs in increasing proportion. Far from being convincing justifications these are not even acceptable excuses.

In this context nobody can and should deny the need for a basic minimum level of general academic education for all, irrespective of the profession one might pursue in future. Such education could be formal or informal and its certificational confirmation does not seem necessary to be considered as a precondition to the offering of jobs.

The fundamental question, however, is the degree of elasticity of our tolerance to the growing phenomenon of an indefinite postponement of the ultimate question mark (that of selecting and entering a profession) by an aimless pursuit of academic education till it is no more possible or practicable for an individual. Should this be permitted to happen and consequently endanger decision making on the vital issue of selection?

It also appears appropriate to give a closer and a critical look at the content of these examinations which have somehow become 'omnipotent' and 'omnipresent'. More often than not, they operate in a very narrow field, and attempt to cover only the abilities of the 'head' and leave out of their operational orbit the faculties of the 'heart' and the proficiencies of the 'hand'. (Courtesy : The Hindu)

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National seminar on correspondence education

A national seminar on correspondence education was held at the Panjab University recently. Prof. Bakhshish Singh, Director of Correspondence Courses, Punjabi University, delivered the keynote address at the seminar. He proposed the setting up of a central organisation to lay down the criteria and standards for correspondence courses all over the country and also to review the working of the institutions imparting such education from time to time. He said that all correspondence institutes and directorates should be affiliated to the proposed central agency. This centre should prescribe syllabi and courses besides preparing course material on a centralised basis with a view to avoiding duplication and overlapping of courses.

between formal and non-formal education. There was a consensus among the delegates that the guidelines prepared by the University Grants Commission for the correspondence courses and the staffing pattern were faulty and impracticable.

Delegates from Rajasthan, Mysore, Punjabi, Panjab, Bhopal, Kerala and Madurai Universities participated in the deliberations of the seminar. Shri D. P. Nayar former Educational Adviser to the Planning Commission also took part in the deliberations.

Bangalore organises workshop on examination system

The Bangalore University organised a workshop recently to review the present examination

at present was miserably lacking. He suggested that coding system should be reintroduced to ensure secrecy of candidates' identities and felt that revaluation should be retained because there was a demand for it. He also felt that students would have to be briefed thoroughly on their syllabus and they could also be provided with model answers. Referring to the internal assessment, Dr. Ramakrishna advocated that this system should be avoided as far as possible.

Training programme for resource persons

Prof. M. V. Mathur, Director, National Institute of Educational Planning and Administration, inaugurated a UNICEF-assisted week-long training programme for resource persons to train district education officers with a view to achieving the goal of universalisation of elementary education. He said that India had yet to develop an educational system which would respond to the rural needs. Referring to the drop-out problem, Prof. Mathur suggested that schools should be run on non-traditional and non-formal patterns. He felt that educational planners had been caught up with the concept of average cost. On the contrary, he maintained, emphasis should shift to the relevant cost concept for the weak which cost was higher than the average cost. He however pointed out that most of the good educational plans suffered at the delivery end because of weak implementation.

Addressing the participants, the Regional Director of UNICEF, Mr. T. G. Davies, stressed the need for curriculum development at district levels keeping in view the specific characteristics of local environment. Education must provide the necessary stimulus to a child to enable him develop his faculty and full genetic potential. He added that the UNICEF-assisted project "comprehensive access to primary education" was aimed at providing learning materials mainly for the learners of non-formal education centres.

Mr. J. Ratnaike, Educational Adviser of the Unesco regional

CAMPUS NEWS

Prof. R. C. Paul, Vice-Chancellor of the University, said that correspondence courses should be self-sufficient in academic matters. He wanted the correspondence courses to be job-oriented. There should be, Prof. Paul added, short-term and long term programmes leading to diplomas and degrees of a different nature.

Maj. Jiwan Tewari, Director of Correspondence Courses of the Panjab University, said that the teachers in the correspondence course and those in the university departments should have the relationship of associates and not of subordinates.

The seminar discussed, among other things, the nature of the faculty and the relationship bet-

system of the university. Inaugurating the workshop, the Vice-Chancellor, Prof. T. R. Jayaraman, said that the syllabi of the university must be such that students would be enthusiastic to study the same and appear for examinations. He felt that poor tabulators would have to be weeded out. Referring to the mechanisation, the Vice-Chancellor expressed the view that while it had many advantages, it was also possible for such a system to create large-scale errors.

Dr. G. Ramakrishna, Head of one of the Study Groups at the workshop, pointed out that one of the imperatives would be to create greater confidence in the students for their examiners which

office said that a major handicap in implementing primary education programme was lack of data. He felt that there was not enough focus in the educational programmes on the disadvantaged child.

About 37 participants from 15 states and 3 union territories took part in the training programme.

PAU to impart training to young farmers

Presiding over a seminar on marginal farmers and landless workers held recently in Patiala, the Vice-Chancellor of the Punjab Agricultural University, Dr. Amrik Singh Cheema said that the university would start three special schools in the state for imparting education in agriculture to young farmers. These schools would be located at Patiala, Bhatinda and Gurdaspur.

The Vice-Chancellor said that the unrest among youth was on the increase because of growing unemployment and the only way to solve this problem was to make adequate training facilities available for the youth so that they could adopt a vocation of their choice with financial help from banks. He urged upon the financing institutions to provide loans liberally to youth to start dairy farming, poultry or piggery to supplement their income.

Dr. J. C. Bakshi, Director of Extension Education, PAU, revealed that the Central Government had approved a special project to be executed by the university for imparting training to young farmers for self-employment. Under this scheme, two lakh youth would be trained and a stipend of Rs. 100/- per month would be given to every trainee.

Need for study of forestry stressed

A national symposium on production and utilisation of forest products was held at the Regional Research Laboratory, Jammu, recently. The consensus at the seminar was that Forestry as a subject should be taken up right from the primary level of education and forest botany and natural history should find distinct place in teaching of botany at the

higher secondary, college and university levels. The participants in the symposium felt that greater emphasis should be laid on collection and processing of medicinal herbs in rural areas; requirements of timber and firewood of the rural people be found out and action taken; and in view of overall shortage of industrial and edible oils, all efforts should be made to search more oil-yielding species of trees and plants.

Other recommendations made at the symposium included: registration of existing and prospective entrepreneurs with the concerned forest departments to facilitate release of raw material; laying aside of two per cent of the revenue obtained from supply of raw materials for research and development work; establishment of data bank to provide information on past trends of consumption, present availability and requirements and future demands for all major and minor forest products.

Uniform fee proposed for Maharashtra Varsities

Based on the recommendations of the Study Group appointed by the Maharashtra Government, six non-agricultural universities in the State have been advised to revise the tuition fees and bring them up to a uniform rate of Rs. 400 per annum. The application of the uniform rate would mean an increase of Rs. 50 to Rs. 70 in the Bombay University, Rs. 100 in the case of SNDT University and from Rs. 175 to Rs. 185 so far as Nagpur University is concerned. The State Education Minister, Shri S. S. Varde, said the increase was phased out so that the uniform rate would be applicable in all the six universities by 1981-82.

The Government also decided that the universities having the faculties of Arts, Science, Commerce and Education should give free studentships involving the foregoing of fee income receivable from 2.5 per cent of the number of students enrolled in the respective colleges. Within this limit each college may grant full, three-fourth, half or quarter free-studentships at its discretion on

merit-cum-means basis and students whose annual family income does not exceed Rs. 9000 would be eligible for these freeships.

Training programme for adult education supervisors

The Vice-Chancellor of Kerala University, Dr. V. K. Sukumaran Nayar, inaugurated a training programme for national adult education supervisors at Neyyar dam near Trivandrum recently. In his address he said that universities should not remain as mere degree granting agencies but should cater to the needs of society at large. He stressed that all educated should find time to help the national adult education programme. Dr. Nayar added that mere literacy was not enough. It should include health and hygiene, civic rights and responsibilities, legal provisions, saving habits, etc.

Dr. N. A. Karim, Pro-Vice-Chancellor of the university, delivered the valedictory address. He highlighted the need for commitment among educated to help the underprivileged sections of the society. In this connection Dr. Karim said that the university was proposing to start a centre for adult education and extension services.

Several participants representing institutions all over Kerala attended the training programme and the core staff was drawn from Kerala and Calicut Universities, various voluntary organisations and the NCERT.

Concession for external candidates

The Academic Council of Bangalore University has decided to simplify the admission method for the external candidates. Under this scheme persons who have passed their degree courses ten years back or earlier could register for postgraduate courses even if they had obtained mere pass marks.

The university has also decided to start a one-year diploma course in Russian from the next academic session and the Faculty of Arts and the Board of Studies in English and European Languages have been examining the feasibility of starting such a proposal.

Restructuring of medical education

A four-day national conference on medical and health education was inaugurated by the Prime Minister, Shri Charan Singh, in New Delhi recently. In his address the Prime Minister called for overhauling of medical education in view of the national requirements. He said that a system that imparted medical education on urban and even foreign lines had to be modified. He observed that the system had to take cognizance of the conditions existing in the country as a whole and had to give greater importance to the positive aspects of health and prevention of disease as compared to cure or treatment. The system would have to actively participate in spreading of health education which should become a part of the cultural ethos of the people. In his opinion medical science was becoming increasingly sophisticated taking man to new heights while the situation back home was still being neglected. This situation was no different from what it was in other developing countries. He wondered why health education had not been included in the educational system earlier and emphasised that steps had to be taken immediately to remedy the situation. Medical education through different media should be given to those who could not attend educational institutions.

The Union Minister for Health and Family Welfare, Mr. Rabi Ray, said that though the country had established institutes of excellence in the field of medical sciences but the Indian doctors who constituted the backbone of the medical system preferred to render their services in West Asia and England. In this connection he referred to the basic flaw in the medical education being imparted in the country. Based on an alien model it induced them to move away from their moorings to foreign lands. Referring to the present system

of health care the Minister said that out of 1,84,000 doctors in India, 68 per cent were working in cities catering only to 22 per cent of the population while the 78 per cent of the population in villages was looked after by the remaining 32 per cent doctors. He said that health education should be made an integral part of the school curriculum.

Speaking on health, manpower development including short-term medical courses, Dr. O.P. Gupta, Director of Medical Education and Research of Gujarat, said that it was necessary to develop an intermediate cadre of health manpower to deliver need based mid level health care to the rural population. The rural health workers would have to be trained to look after the health of the villagers. In this connection, Dr. Gupta suggested that the health workers should undertake a three-year rural medical health course, after higher secondary. The training for the courses should be given at district hospitals, primary health centres and other suitable places.

Apart from defining the infrastructure and medical personnel requirement in the next decade, the conference also debated the desirability of having universities of Health Sciences, similar to agricultural universities and constitution of a medical and health education commission on the lines of the University Grants Commission.

About 300 delegates including the central and state health ministers, secretaries, officials of the directorates of health services, health education bureau and members of medical colleges participated in the deliberations of the conference.

JNTU convocation

Shri K.R. Narayanan, Vice-Chancellor, Jawaharlal Nehru University, delivered the fourth convocation address at the Jawaharlal Nehru Technological Uni-

versity at Hyderabad recently. In his address Shri Narayanan stressed the need for devoting greater attention and allocating more funds for developing knowledge and knowhow which were of human and social significance. If the immediate tasks, he added, of eradicating poverty, disease, inequality and injustice on earth were neglected by science in favour of conquests of the planets and stars and the acquisition of instruments of political, economic and military power, it might lead to the leadership of an elite group of nation over the majority of mankind.

Shri Narayanan said that this technological despotism of the future would be more frightful and totalitarian than anything that had occurred in history. While science and technology was transforming the world into global village, mankind had advanced very little both in terms of human consciousness and social organisation which might turn out to be a dichotomy of tragic dimensions. The JNU Vice-Chancellor said that the challenge that the nation was facing was not only to catch up with the scientific and technological revolution, but also to integrate our values as well as our needs with the inexorable process so that we might build a just and progressive social order in our country and make a contribution to a new and equitable order in the world.

The Governor of Andhra Pradesh, Shri K.C. Abraham, presided over the function and awarded degrees and gold medals to the successful candidates.

Regional institute of welding technology

The Kerala Government proposes to set up a regional institute of welding technology in Trichur soon. The State Education Minister, Shri C. H. Mohammed Koya said that the expert committee appointed by the Southern Regional Council for Technical Education was expected to make its recommendations in this behalf.

The new institute would benefit students in Kerala, Tamil Nadu, Karnataka and Andhra Pradesh.

It would conduct certificate, diploma and degree courses in welding technology, maintain standards on par with international levels and conduct higher research.

The Minister also said that a degree course in instrumentation engineering and a degree course in production and plant maintenance in Trivandrum Engineering College and Trichur Engineering College respectively would also be started during the current academic year. Post-diploma courses in biomedical engineering in the Kottayam Polytechnic, foundry technology in Maharaja's Technical Institute, Trichur and Architectural draftsmanship in Trivandrum Women's Polytechnic have also been planned.

UGC assistance to varsities for college development

The University Grants Commission has advised every affiliating university to develop a College Development Council in order to bring about a qualitative improvement in the academic working of colleges. The UGC Chairman, Prof. Satish Chandra, said that a sum of Rupees three lakhs had been earmarked for each of these universities for this purpose. He added that the college development councils would be required to coordinate the development of the colleges and monitor their academic programmes.

Prof. Satish Chandra said that a two-way scheme in favour of state universities and those that were yet to be developed was under preparation for the purpose of sanctioning grants to the universities and about twenty universities were expected to be brought under the category of developed universities.

With regard to financial assistance to state and central universities, the UGC chief said that no discrimination was being made by the UGC in this regard. He however clarified that the state universities were getting funds from the State in addition to what they got from the UGC whereas the central universities depended solely on the UGC grants. He added that the deemed

universities were being treated at par with the central universities so far as the UGC grant was concerned.

Need to restructure the educational system

Delivering the presidential address at a seminar on management aspects of education systems held recently at Hyderabad, Dr. M.V. Rajagopal, former Vice-Chancellor of Jawaharlal Nehru Technological University, emphasised the need to restructure the whole educational system of the country so that it discharged the functions expected of it in the present day. He welcomed the application of the modern systems approach to this important subject of education and said that pursuit of excellence, imparting skills and providing individual motivations were the multiple objectives and one could not be sacrificed for another.

Dr. Dharni P. Sinha, Director of Special Studies Division of the Administrative Staff College in his keynote address mentioned that education had all the main characteristics of an enterprise. The country's resources—manpower, money and teaching apparatus—should have to be put to optimum use. There must be proper coordination between inputs and outputs. The executives of the institutions should have proper attitudes towards academic, administrative and financial patterns. Dr Sinha added that the management of human affairs was the most difficult of all exercises and the teachers and administrators must pool their resources in solving the problems.

Prof. M. K. Subrahmanyam, Principal Director of Indian Institute of Management and Commerce underlined the need for tutorials and seminars and case studies in an educational institution.

Shri I. V. Chalapathi Rao, Registrar of Central Institute of English & Foreign Languages observed that in the matter of course content, teaching methods and administration, there must be innovation and constant upgrad-

ing. This could be achieved only when teachers and administrators act in a spirit of cooperation and commitment.

NSS conference inaugurated at Patna

Dr. K.N. Prasad, Vice-Chancellor, Patna University, inaugurated a 2-day NSS conference of the programme coordinators of different universities in Patna recently. In his address, Dr Prasad said that the National Service Scheme should engage the students and youths in national reconstruction and social reformation activities. He said that the huge investments on this scheme should be utilised properly. He however regretted that the society had not yet gained much from this scheme mainly due to prevalent chaos in educational institutions. He therefore called upon the programme coordinators to formulate a comprehensive plan for welfare of society and stressed the need for setting up a project bank for successful implementation of the scheme.

Prof. B. Mahanthy, Deputy Programme Adviser, NSS in his presidential address said that the aim of NSS was to give practical orientation to the theoretical knowledge of students. He said the NSS and NAEP were similar as both aimed at educating the society.

PAU organises training programme in dairy farming

The Punjab Agricultural University has taken up a project under the lab-to-land programme to promote dairy and poultry farming as a means of socio-economic welfare of the rural families. Under this programme the university experts would conduct training courses in the villages in the evenings to enable the labourers and small and marginal farmers to attend these courses without disrupting their daily work.

According to Dr. J.C. Bakshi, Director of Extension Education of the PAU, the university would provide technical assistance for setting up poultry units, supply of inputs and the market-

ing of poultry products. He suggested that a poultry farm should be started with 200 to 1000 birds in the beginning depending upon the resources of an individual family. The PAU would supply chicks of both the egg-type and meat-type improved breeds to the interested poultry farmers.

Dentistry education at Madras Varsity

Speaking at a function organised by the Dental Wing of the Madras Medical College, the Vice-Chancellor of Madras University, Dr. G. R. Damodaran said that dentistry had become an elaborate branch of medicine with widening areas of specialisation. He said that with more than half-dozen specialities like prosthetics, pedodontia and oral surgery, dentistry called for a high degree of precision and accuracy. Referring to the compartmental system at all stages of the BDS, the Vice-Chancellor said that the matter was under consideration of the university.

Dr. V. Sivarajan, Dean, Madras Medical College who presided over the function said that the Dental Wing had become a responsible offspring of the Madras Medical College and stressed the need for students to retain the knowledge they gained in the classrooms.

Expert panel for Sanskrit teaching

The Karnataka Education Minister, Shri B. Subbayya Shetty, said at a function in Bangalore that the government was proposing to constitute an expert committee to go into the question of teaching Sanskrit in the educational institutions in the State with a view to developing Sanskrit in the right direction. He said that the Government intended that Sanskrit should also grow along with other languages in the State. Referring to the complaints that answers in Sanskrit were written either in English or in Kannada even at the postgraduate level, Shri Shetty said that this would not help Sanskrit to grow and therefore the government would like to review the whole

position so far as Sanskrit study in the state was concerned.

Science Varsity for Karnataka proposed

A University of Science is proposed to be established in Karnataka. A Bill to this effect has already been passed by the State Legislative Assembly. The university, when it comes into being, will have under its jurisdiction nine medical colleges, three dental colleges, the college of pharmacy and nursing, the National Institute of Health and Neurology and the National Institute of Speech and Hearing.

The State Health Minister, Shri Mallappa said that the government was not in favour of any short-term medical course as the colleges were turning out about 1000 doctors every year. He added that government was also considering to introduce a legislation to make rural service a must for the government doctors before they get promotions or admission to the post-graduate course. The scheme of the community health worker would be implemented. A health kit for every 1000 population would be provided to the health worker with a view to influencing the rural public on family planning and other health activities.

NSS for rural development

Inaugurating a five-day refresher course for NSS programme officers, Shri M. R. Apparow, Vice-Chancellor, Andhra University urged the students community to involve themselves in large numbers in the NSS for rural development. He underlined the importance of the NSS and called upon the programme officers to equip themselves to work in rural areas and to impart knowledge to the rural masses. He was of the view that as an incentive at least five per cent reservation for post-graduate courses for NSS volunteers should be made.

Prof. K. V. Ramana of the Andhra University in his presidential address said that the aim of the refresher course was to infuse new ideas to NSS volunteers who could fully equip and

involve themselves for rural uplift.

Exemption for tribal candidates in UPSC exams

The Union Public Service Commission has exempted the tribal candidates from the north-eastern region from taking a compulsory paper in a regional language for the all-India competitive examinations. These candidates would be allowed to continue to appear in these examinations through English medium without having required to appear in a compulsory paper in a regional language for a period of one year. They would however be required to appear in the compulsory paper in a regional language after the expiry of one year.

The UPSC also proposes to take steps to ensure uniform assessment of examination papers in the Civil Service Examinations. This year, the candidates would have the option to answer question papers in English or any other Indian language included in the Eighth Schedule of the Constitution.

Panjab Varsity compiles English-Punjabi dictionary

The Panjab University has compiled a standard English-Punjabi Dictionary and its first volume was released by the State Governor, Shri Jaisukhlal Hathi recently in Chandigarh. The Governor hoped that the standard work of reference would go a long way in promoting the Punjabi language and enrich Punjab's culture.

A full-fledged department of the university remained engaged in the task of compilation and translation for nearly seven years. The Punjab State University Textbooks Board provided the financial and academic assistance for this ambitious project. There will be 1,30,000 entries in the dictionary. Its second volume would be available sometimes in December.

Symposium on farm research

As part of its golden jubilee celebrations, the Indian Council

of Agricultural Research, proposes to organise a five-day international symposium on agricultural research and education systems for development and a global convention of the International Federation of Agricultural Research Systems for Development. The symposium will be inaugurated by the President, Shri N. Sanjiva Reddy, in New Delhi on September 3, 1979.

About 500 leading Indian scientists and over 60 scientists of international repute from 40 foreign countries are expected to participate in the deliberations of the symposium.

INSA awards for young scientists

The Indian National Science Academy has selected eight young scientists for the award of Science Academy Medals for the year 1979. The award carries Rs. 1500 in cash and a medal. It also carries a research grant of Rs. 5,000 from the Kothari Scientific and Research Institute, Calcutta, to enable the selected scientists to pursue research in their respective fields of specialisation. The recipients of the award are: Dr. (Miss) Manju Bansal (IISc, Bangalore); Shri Samir K. Brahmachari (IISc, Bangalore); Dr. Kamanio Chattopadhyay (BHU); Dr. Yogesh Jaluria (IIT, Kanpur); Dr. Opendar Krishen Koul (Jammu); Dr. Jagdish Kumar Ladha (Madurai); Dr. (Miss) Amita Pal (Calcutta) and Shri Sundaram Ramakrishnan (AIIMS, New Delhi).

Medical Varsity for Bihar proposed

A new medical university is proposed to be established in Bihar. According to the State Health Minister, Mr. Ramprit Paswan, the government is expected to submit a proposal in this regard to the Medical Council of India soon.

The Minister also said that there would be one health sub-centre for every 5000 people as against 10,000 fixed earlier. Each sub-centre would get a grant of Rs. 12,000.

SV Varsity celebrates jubilee year

The Sri Venkateswara University will be celebrating its silver jubilee year from September this year and the function will be inaugurated by President Shri Neelam Sanjiva Reddy. As part of the celebrations, the university has drawn up a year long programme starting with a week's celebrations in the university campus to be followed by series of programmes in the affiliated colleges.

UGC assistance for solar heater

The University Grants Commission has provided financial assistance to Prof. S. Srikantiah of Shri Krishna Rajendra Silver Jubilee Technological Institute of Bangalore for designing and fabrication of solar heaters and dryers for use in industry and houses. The solar heater is expected to provide hot water for 300 days in a year at a temperature of 50-60 degree C. apart from the use in industry where medium temperature water is required.

Hyderabad Varsity may move to Nagarjunasagar

The Andhra Pradesh Government has decided to shift the Central University of Hyderabad to Nagarjunasagar about 100 miles away from Hyderabad. It has also been decided to rename the university as Nagarjunasagar University. The Chief Minister of the State, Dr. M. Chenna Reddy, has already held discussions with the Chancellor of the University and the matter would now be discussed with the Union Cabinet. The University would be residential in nature.

Adult education to be reoriented

The Haryana Education Minister, Shri Swami Agnivesh said that the adult education scheme in the State would soon be reoriented and non-formal education given top priority in order to create an awareness among the people. He said that so far the emphasis had been on higher education to

the detriment of primary education and every effort will now be made to bring about greater emphasis on primary education in the State.

Adult literacy centres proposed

The Principals' conference on adult education held recently in Chandigarh has recommended that every college with a NSS unit should open at least one adult education centre. It also recommended that the training of teachers and supervisors should be organised by Panjab University through the Regional Resource Centre.

The conference was inaugurated by Prof. R.C. Paul, Vice-Chancellor of Panjab University and the State Education Secretary, Shri Manmohan Singh presided.

Course on study skills

The Department of Youth Welfare of Madurai Kamaraj University proposes to organise a two-day course on study skills at six different centres under its jurisdiction. During the course students will be taught the techniques of study, note making, acquiring study speed, the art of comprehension, etc. The course is designed to be conducted with the help of films and slides and will enable the students to get good marks, understand the subject of study and to retain them in memory. In each centre sixty students will be admitted and no tuition fee will be charged.

Short-term courses for rural youth

The S.V. Polytechnic, Tirupati, proposes to conduct short-term courses for rural youth with a view to making them self-employable. Under this programme, twenty rural youth will undergo a three month course on 'Agricultural Technician' in which repairs and maintenance of pump sets, oil engines and electric motors will be taught. Fifteen rural youths will do the four-month course on radio and transistor assembly and servicing.

HAU to start training course for rural youth

The Institute of Agricultural Technology, Training and Education of Haryana Agricultural University proposes to undertake an intensive programme of organising training in preservation of fruit and vegetables. Dr. B.P. Singh, Associate Dean of the university said that the university would also start a three-month training course under a national scheme for training rural youth for self-employment.

HAU decides to switch over to Hindi

The Haryana Agricultural University has decided to switch over to Hindi completely from January next year. The university authorities have initiated necessary measures to step up the use of Hindi in the administration. Arrangements were also being made for starting Hindi classes for the office personnel who did not know Hindi. In order to emphasise the use of Hindi, the Vice-Chancellor of the university, Dr. P.S. Lamba, said that as an immediate step all letters received

in Hindi would be replied in Hindi. The Department of Languages of HAU has prepared a book of Hindi terminology for the benefit of the university staff and similar glossaries would also be prepared soon for other subjects.

World Sanskrit centre at Pondy proposed

At a two-day conference held recently in Pondicherry, the Sri Aurobindo Society decided to set up an international centre of Sanskrit soon with a view to carrying out research in the subject. The delegates attending the conference appealed to all political leaders to make Sanskrit the national language of the country. They also urged the Union Government to appoint a Sanskrit scholar to find out ways and means of propagating the study of Sanskrit.

About 200 delegates from all over the world took part in the deliberations of the conference.

Osmania to start special courses in English

The Osmania University proposes to start special courses in

general English and spoken English for the benefit of research scholars, teachers, postgraduate students and the students of professional courses. The students who have studied through a medium other than English will be given preference. Application forms and further details can be obtained from the Language Cell, Department of English, University College of Arts, Osmania University, Hyderabad.

Personal

1. Dr. K. N. Prasad has taken over as Vice-Chancellor of Patna University.
2. Prof. Jaffar Nizam has taken over as Vice-Chancellor of Kakatiya University.
3. Prof. B. Sarveswara Rao has taken over as Vice-Chancellor of Nagarjuna University.
4. D.R. Borthakur, Vice-Chancellor, Assam Agricultural University, has been nominated by the Government of India as leader of the delegation to visit North Korea under the Indo-DPKR Cultural Exchange Programme.

Education through Correspondence

(Continued from page 454)

rested in becoming practising lawyers. The statutes of the universities must be suitably amended to enable other eligible candidates (on the basis of their qualifications, aptitude, experience and interest) to seek admission to correspondence and private courses. The aim in correspondence education should be to enroll as many students as possible for the simple reason that it becomes economically more viable.

Besides, more universities should try to join the existing ones in offering professional courses. The accent should be on LL.B., LL.M., B.Ed., M.Ed., M.P.A., M.B.A. etc. Higher courses of study like M.Phil. and Ph.D. should also be thrown open to private and correspondence students. They will have to compete with the regular students and pass the same examinations or produce a dissertation or thesis of the same standard. True, there would be a greater number of students going for higher studies but at the same time it is likely to encourage those well settled in various walks of life to improve their present qualifications. As such chances are that qualitatively superior results would be attained in the fields of law, education and administration. The

departments and universities concerned would see to it that standards are maintained at a fairly high level, and there need be no fear of deterioration.

The report of the Expert Committee which is likely to be gathering dust on some obscure shelf of the Ministry of Education, needs to be brought out and its recommendations studied and acted upon to provide an effective parallel system of education to decrease the load on the campuses in turmoil and enable the sincere students to carry on their studies. Implementation of a programme to introduce correspondence courses in trades will produce technicians in a large number to meet the ever increasing demand for trained personnel in the industries. A new era will dawn by revolutionary changes in the concept of traditional system of education. It is a national necessity more important than prolonged arguments over medium of instruction. It would be the right step in the right direction to introduce a decentralised and diversified system of education which can be of great benefit to the rural masses in dire need of necessary instruction and guidance to learn useful trades as well as attain higher education to wipe away social, economic and political backwardness. □

HARYANA AGRICULTURAL UNIVERSITY

HISSAR

Advertisement No. 5/79

Applications invited for following posts. Higher start outstanding qualifications, experience and achievements. Benefits of Contributory Provident Fund and leave etc. according to University Rules. Applications of the candidates already in service must reach through proper channel upto the fixed date. Applications on prescribed form (obtainable free by sending self-addressed unstamped envelope size 23x10 cms. to Assistant Registrar(R), HAU, Hissar) accompanied by prescribed fee of Rs. 10/- in the form of Crossed Postal Order in the name of Assistant Registrar(R), HAU, Hissar payable at Hissar Post Office should reach Registrar by 25.9.1979 except post at Sr. No. 30 (Assistant Professor English) for which last date for receipt of application is 10.9.1979. The envelope containing application must be superscribed as "APPLICATION FORM FOR THE POST OF—".

1. Professor of Pharmacology: (One)

Essential: i) Second class B.V.Sc. degree. ii) Second class M.V.Sc. in Pharmacology. iii) Ph.D. in Vety. Pharmacology. iv) At least ten years' experience of teaching and research in Vety. Pharmacology out of which 5 years should be as Associate Professor or of equivalent rank and evidence of having conducted independent research and published its results in scientific journals of repute. v) Capacity for organization as Head of Section or Department of a Teaching or Research Institute. Desirable: Advanced training in Physiological Chemistry/Toxicology.

2. Professor of Livestock Production and Management: (One)

Essential: i) Second class B.V.Sc./B.Sc. (An.Sci.)/B.Sc. (Dairying)/B.Sc. (Agri.). ii) Second class M.Sc./M.V.Sc. in any branch of Animal Science. iii) Ph.D. in any branch of Animal Sciences. iv) Ten years' experience of research/teaching/extension in Livestock Production and Management out of which at least 5 years should be as Associate Professor or equivalent rank. Desirable: Experience in Management of large Animal Research Establishment.

3. Professor (Plant Biochemistry): (One)

Essential: i) Second class B.Sc. (Agri.)/B.Sc. ii) Second class M.Sc. in Biochemistry. iii) Ph.D. in Biochemistry with specialization in Plant Biochemistry. iv) Ten years experience of Research/Teaching in Plant Biochemistry out of which 5 years experience should be as Associate Professor or equivalent rank. Desirable: Knowledge of problems connected with bio-chemical aspects of crop production. ii) Advanced knowledge of photosynthesis and related processes.

4. Project Leader: (One)

Essential: i) Second class B.Sc. B.Sc./ (Agri.) ii) Second class M.Sc./M.Sc. (Agri.) in Plant Breeding/Genetics/Pathology/Entomology/Agronomy. iii) Ph.D. in Plant Breeding/Genetics/Pathology/Entomology/Agronomy. iv) Ten years experience of teaching/research/extension on rapeseed and mustard, out of which five years should be as Associate Professor or equivalent. Desirable: Capacity to organise and coordinate research work.

5. Associate Dean, College of Agriculture: (One)

i) Second class B.Sc. (Agri.) followed by Second class M.Sc. in any field of Agriculture. ii) Ph.D. in any field of Agriculture. iii) Ten years experience in teaching / research / extension of which atleast five years should be in class I. iv) Leadership qualities and administrative experience and capacity for organisation in a postgraduate teaching or research dept./institution.

6. Biochemist (Mycotoxins): (One)

Essential: i) Second class B.V.Sc. & A.H./B.Sc. (Ani. Sci.)/B.Sc. (Agri.)/B.Sc. ii) Second class Master's degree in Biochemistry / Organic Chemistry / Physiological Chemistry. iii) Ph.D. in Biochemistry/Organic Chemistry/Physiological chemistry. iv) Five years experience of research / teaching in the above fields. v) Experience in isolation and identification / characterization of mycotoxins. Desirable: Training / Experience in modern analytical techniques.

7. Associate Professor of Veterinary Entomology: (One)

i) Second class B.V.Sc. & A.H. ii) Second class M.V.Sc. in Parasitology with specialization in Entomology. iii) Ph.D. in Vety. Parasitology with specialization in Entomology. iv) Atleast five years experience of teaching/research/extension in Vety. Entomology.

8. Associate Professor (Agronomy): (One)

i) Second class B.Sc. (Agri.) ii) Second class M.Sc. (Agri.) in Agronomy. iii) Ph.D. in Agronomy. iv) Five years experience of Research/Teaching/Extension in Agronomy.

9. Horticulturist: (One)

Essential: i) Second class B.Sc. or B.Sc. (Agri.) ii) Second class M.Sc. (Agri.). Hort. (Pomology). iii) Ph.D. in Hort. with specialization in Pomology. iv) Five years experience of Research/Teaching / Extension in Horticulture (Pomology) as evidenced by publications in Scientific Journals. Desirable: i) Experience/Training in designing and statistical analysis of field experiments on Horticulture crops. ii) Experience in Management of Fruit Orchards.

10. Scientist (Epidemiology & Serology): (One)

Essential: i) Second class B.V.Sc. &

A.H. ii) Second class M.V.Sc. in Vety. Medicine / Bacteriology /Pathology/Epidemiology. iii) Ph.D. in Vety. Medicine/ Bacteriology / Pathology/ Epidemiology. iv) Five years' experience of research/extension/teaching in the discipline(s). Desirable: Research experience of working on blood infectious diseases of animals.

11. Research Officer (Animal Production Physiology): (One)

Essential: i) Second class B.Sc. (Ag.)/B.V.Sc./B.Sc. (An.Sci.). ii) Second class M.Sc. in any branch of Animal Production with specialization in Poultry Physiology. iii) Ph.D. in any branch of Animal Production with specialization in Avian Reproduction. iv) Five years experience of Teaching/Research/Extension in Poultry Physiology/Animal Production Physiology.

12. Extension Specialist (Home Science): (One)

Essential: i) Second class B.Sc. in Home Science. ii) Second class M.Sc. in Home Sc./Extension Education. iii) Five years experience of extension / teaching/research in Home Science. Desirable: i) Ph.D. in Home Science. ii) Familiarity with experience and capacity in organising women's programmes in rural areas. iii) Persons without Ph.D. will have to obtain Ph.D. within five years of the appointment unless extended in the interest of University work, otherwise their future increments will be stopped.

13. Assistant Professor of Animal Nutrition: (One)

i) Second class B.Sc. (Animal Science)/B.V.Sc. & A.H./B.Sc. (Dairying)/B.Sc. (Agri.) ii) Second class M.Sc. in Animal Nutrition with three years experience in teaching/research/extension in Animal Nutrition OR Ph.D. in Animal Nutrition.

14. Assistant Professor of Public Administration: (One)

i) Second class B.A. / B.Com./B.Sc./B.S.H. ii) Second class M.A. in Public Administration with atleast three years' experience of teaching / research in Public Administration OR M.Phil with specialization in Public Administration with two years' experience of teaching/research in Public Administration OR Ph.D. with specialization in Public Administration.

(Note: Above qualifications relaxable for exceptionally bright candidates).

15. Assistant Biochemist: (Three)

i) Second class B.Sc. or B.Sc. (Agri.). ii) Second class M.Sc. in Biochemistry or Agri. Chemistry. iii) Three years experience of research and/or teaching in Plant Biochemistry, preferably quality testing OR Ph.D. in Biochemistry or Agri. Chemistry.

16. Assistant Professor of Biochemistry: (One)

i) Second class B.Sc. or B.Sc. (Agri.) or

B.V.Sc. (ii) Ph.D. in Biochemistry, Nutrition or Agricultural Chemistry OR Second class M.Sc. in Biochemistry, Nutrition or Agricultural Chemistry with three years experience of research/teaching to under-graduate and/or post-graduate classes.

17. Assistant Research Officer (Animal Nutrition): (One)

Essential: i) Second class B.Sc. (Agr.)/B.V.Sc. & A.H./B.Sc. (Animal Science). ii) Second class M.Sc. in Animal Nutrition with three years experience of research in Animal Nutrition preferably in Cattle Nutrition OR Ph.D. in Animal Nutrition.

18. Assistant Professor Veterinary Pathology: (One)

i) Second class B.V.Sc. & A.H. ii) Second class Master's degree in Vety. Pathology with three years' experience in teaching/research/extension in Vety. Pathology OR Ph.D. in Veterinary Pathology.

19. Assistant Professors Veterinary Anatomy: (Two)

i) Second class B.V.Sc. and A.H./B.V.A.Sc. ii) Ph.D. in Veterinary Anatomy OR Second class M.V.Sc. in Vety. Anatomy with three years' experience in teaching/research in Veterinary Anatomy.

20. Assistant Professor Animal Breeding: (One)

Essential: i) Second Division B.Sc. (Agr.)/B.Sc./B.V.Sc. ii) Second Division M.Sc. in Animal Breeding. iii) Ph.D. in Animal Breeding, or 3 years experience as research / extension / teaching Associate or Lecturer or equivalent in Animal Breeding. Desirable: Experience of teaching or research in Sheep & Goat production.

21. Assistant Botanist-cum-Superintendent Botanical Garden: (One)

Essential: i) Second class B.Sc./B.Sc. (Ag.). ii) Second class M.Sc. in Botany. iii) Ph.D. in Botany with specialization in Plant ecology/Taxonomy OR three years of teaching/research/extension experience in Plant ecology/taxonomy. Desirable: Experience of working in a Botanical Garden.

22. Assistant Professor Clinic for Interns: (One)

i) Second class B.V.Sc. & A.H. ii) Second class M.V.Sc. in Surgery/Medicine / Gynaecology. iii) Ph.D. in Surgery / Medicine / Gynaecology OR Three years' experience in Surgery/Medicine/Gynaecology.

23. Assistant Disease Investigation Officer: (One)

i) Second class B.V.Sc. Degree. ii) Second class M.V.Sc. in Epidemiology/Pathology/Bacteriology/Parasitology or Preventive Medicine with three years experience in Livestock/Poultry diseases OR Ph.D. in one of the above disciplines.

24. Cattle Manager: (One)

Essential: i) Second class Bachelor's degree in Agriculture / Vety. / Animal Science. ii) Second class Master's

degree in any branch of Animal Science or Animal Gynaecology. iii) Ph.D. in any branch of Vety. Medicine/Animal Science or three years experience as research/extension / teaching Associate or Lecturer or equivalent of Animal Management. Desirable: Knowledge of Modern Methods of dairy cattle herd management.

25. Assistant Professor of Statistics: (One)

i) Second class Bachelor's degree in Mathematics or Statistics or Agriculture. ii) Second class Master's degree in Statistics or Second class Master's degree in Mathematics followed by diploma in Statistics of I.A.R.S. or I.S.I. iii) Three years' experience of research/teaching to under-graduate and post-graduate classes in Statistics OR Ph.D. in Mathematics/Statistics.

26. Assistant Professor (Meat Technology): (One)

i) Second class B.V.Sc. & A.H./B.V.A.Sc./B.Sc. (Agri.)/B.Sc. (Animal Sc.). ii) Second class M.V.Sc./M.Sc. (Food Tech.)/M.Sc. (Ani. Science)/M.V.P.H. with three years experience as Teaching/Research/Extension Associate or Lecturer or equivalent in the area of Meat Technology OR Ph.D. in any branch of Animal Products Technology.

27. Assistant Professors of Surgery: (Two)

i) Second class B.V.Sc. & A.H. ii) Second class Master's degree in Surgery. iii) Three years' experience of teaching/research/extension in Surgery OR Ph.D. in Surgery.

28. Assistant Professor (Vety. Medicine): (One)

i) Second class B.V.Sc. & A.H. ii) Second class M.V.Sc. in Vety. Medicine. iii) Ph.D. in Vety. Medicine or three year experience in teaching/research/extension in Vety. Medicine.

29. Assistant Professor (Radiology): (One)

i) Second class B.V.Sc. & A.H. degree. ii) 2nd class Master's degree in Vety. Radiology. iii) Ph.D. in Surgery and Radiology or three years' experience as Teaching/Research/Extension Associate or Lecturer or equivalent.

30. Assistant Professors of English: (Two)

Essential: i) Second class B.A. with English. ii) Second class M.A. in English. iii) Ph.D. in English or three years teaching experience in an affiliated college. iv) Knowledge of Hindi to guide translation exercises. Desirable: i) Capacity for organising extra-mural activities like dramatics and debates. ii) Knowledge of Urdu or Punjabi to guide translation exercises.

Note: Preference will be given to the candidates who have also passed M.A. in Hindi or have passed B.A. with Hindi as one of the subjects.

Note

1. For posts at Sr. Nos. 1 to 30, one or more qualifications relaxable in

case of candidates found otherwise outstanding.

2. Special weightage will be given to extension experience possessed by the candidates, for posts in disciplines amenable to extension.
3. For posts at Sr. Nos. 13 to 30, the persons who do not possess Ph.D. at the time of their selection, if selected, will have to obtain Ph.D. degree within a period of five years failing which their future increments may be stopped.
4. No. of posts mentioned against each posts is likely to vary.
5. 20% and 5% vacancies of Assistant Professors and equivalent are reserved for Scheduled Castes and Backward Classes candidates respectively, if suitable candidates from these categories are available.

Pay Scales

Sr. No. 1 to 5	
Rs. 1500-60-1800-100-2000-125/2-2500.	Rs. 1870/-
Sr. No. 6 to 12	
Rs. 1200-50-1300-60-1900	Rs. 1525/-
Sr. No. 13 to 30	
Rs. 700-40-1100-50-1600	Rs. 998/-

REGISTRAR

**UTKAL UNIVERSITY
BHUBANESWAR**

Advertisement
No. Estt. II (32-A)/79
Dated 10-8-79

Applications are invited for the post of Deputy Registrar of the Utkal University. Five copies of application form will be supplied to the candidates from the office of the undersigned in person on payment of Rs. 5.35 paise or by post on receipt of a Crossed Indian Postal order worth Rs. 7.85 paise payable to the Finance Officer, Utkal University, Vani Vihar, Bhubaneswar-4. The candidates who are in service should apply through proper channel but they should submit advance copies (four) of their applications along-with attested copies of certificates and marksheets etc. so as to reach this office by the date specified. The University will pay the leave salary and pension contribution for only two years in respect of the candidates in Govt. service, if selected.

Candidates are required to submit alongwith their applications attested copies of their diplomas, certificates and mark-sheets of all examinations and testimonials.

Qualification and experience :	i. Atleast a Second Class Master's Degree.
	ii. Eight years experience in teaching in a college or in educational administration preferably University administration.

Scale of Pay : Rs. 1000-1530/-

A higher initial may be given to a candidate in case of a suitable qualified and experienced person.

The last date for receipt of application is 5-9-1979. No application will be entertained after the due date.

S.K. Panda
REGISTRAR

PANJAB UNIVERSITY CHANDIGARH

Advertisement No. 14/79

The Vice-Chancellor will be glad to correspond with eminent Scholars of Punjabi Language, possessing Proficiency in Hindi Language and Literature for appointment as Professor in Guru Ravi Dass Chair. This is a tenure appointment for a period of three years in the first instance. The post will be in the pay-scale of Rs. 1500-60-1800-100-2000-125/2-2500 with other ancillary benefits.

Those interested are required to write to the Vice-Chancellor along with their bio-data and a list of their publications by September 20, 1979.

OSMANIA UNIVERSITY HYDERABAD-500 007, (A.P.)

Corrigendum to the Advt. No. 13/79

The post of Professor of Geology advertised vide Advt. No. 13/79 is for P.G. Courses at District Centre, Kothagudem and not for Kothagudem School of Mines, Kothagudem.

REGISTRAR

PANJAB UNIVERSITY CHANDIGARH

Advertisement No. 16/79

Applications are invited for the following posts so as to reach the Registrar Punjab University, Chandigarh along with postal orders of Rs. 10/- by 24-9-1979. Fourteen days extra time is permissible to persons who have to submit their applications from abroad.

POSTS AND PAY-SCALES

1. Professor : Rs. 1500-60-1800-100-2000-125/2-2500
2. Reader : Rs. 1200-50-1300-60-1900
3. Lecturer : Rs. 700-40-1100-50-1600

1. PROFESSORS

- * Sociology-1 (Under U.G.C. Special Assistance Programme); Function Theory, Number Theory, Modular Forms, Algebra, Geometry and Related subjects-1 (Department of Mathematics); Analysis-1 (Centre for Advanced Study in Math.)

2. PROFESSORS/READERS

Centre for Advanced Study
in Mathematics

Numerical Analysis-1; Function Theory, Number Theory, Modular Forms, Algebra, Geometry and Related subjects-4.

3. READERS

Law-1 (Temporary);
Applied Mathematics-1 (Deptt. of Mathematics);
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4. LECTURERS

Law-1 (Taxation Law);
Applied Mathematics-1 (Deptt. of Mathematics);
Mass Communication-2 (Permanent-1, temporary-1).

QUALIFICATIONS

1. Professors Essential

- a) A first or high second class Master's degree of an Indian University or an equivalent qualification of a foreign University in the subject with bright academic record.
- b) Either a research degree of doctoral standard or published research work of high standard in journals of repute.
- c) About 10 years' experience of teaching Post-Graduate classes and/or research, and
- d) Experience of guiding research at Doctoral level.

OR

An outstanding Scholar with established reputation who has made significant contribution to knowledge in the discipline concerned.

* Professor of Sociology

Specialisation (s) in one or more of the following fields :

- (a) Population Studies
- (b) Urban Studies
- (c) Sociology of Development.

*NOTE :- Persons who have already applied for Professor's post in Sociology in response to Advertisement No. 11/79 need not apply again. Their earlier applications shall be considered. They are, however, required to supply on plain paper the requisite information in regard to the specialisation mentioned above.

2. Readers Essential

- a) A first or high second class Master's degree of an Indian University or an equivalent qualification of a foreign University in the relevant subject with bright academic record.
- b) Either a research degree of doctoral standard or published

research work of high standard in the subject concerned in journals of repute.

- c) About five years' experience of teaching post-graduate classes and/or research; and
- d) Competence to guide research. Evidence of being engaged in making innovation in teaching methods and production of standard teaching material, will be an additional qualification.

3. *Lecturers

(Department of Mass Communication)

QUALIFICATIONS

- i) Consistently good academic record with a first or high second class Master's degree in the subject (Communication/Mass Communication/Journalism etc.) from an Indian University or an equivalent qualification from a foreign University.

OR

- ii) A first or high second class Master's degree in Social Sciences/Sciences/Humanities with at least a second class Bachelor's degree or Diploma in Journalism from a recognised Indian University/Post-Graduate Diploma from a recognised National Institute.

Desirable

- i) Teaching experience at college or University level.
- ii) Work experience in any area of Mass Communication (Newspaper/Magazine, News Agency, Public Relations, Advertising Radio or T.V. Journalism etc.)

* SPECIALISATION

Research Methodology in Communication or Development/Rural Communication.

*NOTE :- Persons who have already applied for these posts in response to Advertisement No. 11/79 need not apply again. Their earlier applications shall be considered. They are, however, required to supply the requisite information on plain paper in regard to the specialisation mentioned above.

4. Lecturers Essential

- a) A Doctor's degree or research work of an equally high standard; and
- b) Consistently good academic record with 1st or high second class i.e. 55% marks or more (B in the seven point scale). Master's degree in a relevant subject or an equivalent degree of a foreign University. Having regard to the need for developing interdisciplinary programmes, the degree in (a) and (b) above may be in relevant subject. The

consistently good academic record at Pre-Master's level would be interpreted as an average of 50% or above at the two examinations prior to Master's examination.

Provided that if the Selection Committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of a very high standard, it may relax any of the qualifications prescribed in (b) above.

Provided further that if a candidate possessing a Doctor's degree or equivalent research work is not available or is not considered suitable a person possessing a consistently good academic record (weightage being given to M. Phil. or equivalent degree or research work of quality) may be appointed provided he has done research work for at least two years or has practical experience in a research Laboratory/Organisation on the condition that he will have to obtain Doctor's degree or give evidence of research work of equivalent high standard within five years of his appointment, failing which he will not be able to earn increments until he fulfils these requirements.

Candidates for the posts of Professors and Readers who do not possess a doctoral degree are required to submit 10 typed/cyclostyled copies of brief resume of their published work. 15% posts of Lecturers will be reserved for the members of the scheduled castes and 2% for the members of the Scheduled Tribes, but these will be filled up by others if no suitable Scheduled Castes/Scheduled Tribes applicant is available.

Persons already in service should route their applications through proper channel. Incomplete forms and those received after the due date will not be entertained. Serving employees, may however, send their applications on the prescribed proforma, direct to the University. They may route another copy through their Department. They will be allowed to present themselves for interview only on the production of 'No Objection Certificate' from their employers. Canvassing in any form will disqualify the candidate.

Application forms can be obtained from the Cashier, Panjab University, Chandigarh, personally on payment of Rs. 2/- or by making a written request to the Finance & Development Officer, Panjab University, Chandigarh, accompanied by self-addressed stamped envelope of 23x10 cms. and a postal order for Rs. 2/- drawn in favour of the Registrar, Panjab University, Chandigarh.

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Persons already in service should apply through proper channel. Government servants who are not in a position to submit their applications through proper channel before the due date should submit an advance copy before the due date and regular applications through proper channel by 17-9-79.

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2. A candidate should not be over 50 years on 15-10-1979 and must possess a uniformly good academic career with atleast a high second class Master's degree of an Indian University or equivalent qualification with atleast 10 years experience of teaching degree classes and/or Administrative Experience. Proficiency in HINDI—to write and to speak—is essential.

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4. Persons already in service should apply through proper channel. They may send an advance copy of their application by the due date and should bring 'NO OBJECTION CERTIFICATE' from their employer when called for an interview. Persons desirous of serving on deputation need not apply.

6. The University reserves the right to fill-up or not to fill-up the post and/or to call only selected candidates for interview at their own cost.

M.L. Tiwari
ACTING REGISTRAR

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Peerzada Gh. Hassan
DEPUTY REGISTRAR (Adm.)

THESES OF THE MONTH

A list of Doctoral Theses Accepted by Indian Universities

SOCIAL SCIENCES

Anthropology

1. Bhat, Krishna Hillemane. Ethnomedicine in a Karnataka village. Karnatak University.
2. Kar, Parimal Chandra. Socio-economic life of the Garo in transition. Gauhati University.
3. Onkar Prasad. Folk music and folk dances of Banaras. University of Calcutta.

Psychology

1. John, Chuzhukunnil John. A survey of the attitudes of university teachers and postgraduate students towards the existing teaching methods and their views on and perceptions of students unrest and student development services with special reference to Madurai University. Karnatak University.
2. Ram, Usha. Measurement of the degree of mental retardation. University of Poona.

Sociology

1. Chawngliana, Kenneth. Christianity and the Mizo society : A study of the impact of Christianity on the Mizo social structure. University of Poona.
2. Mullatti, Leela Laxman. Impact of Virasaivism on the status of woman. University of Poona.
3. Natarajan, C.N. Pirmalai Kallars of Tamilnadu : A study of their marriage, kinship and clan system. Madurai Kamaraj University.
4. Tohsin, Sultana Begum Rasul. Physical, social and economic problems of the adolescent girls of secondary schools of Nowgong District. Gauhati University.

Political Science

1. Acharya, K.R. Political behaviour in Telangana : An empirical study of preferences and motivations during parliamentary elections, 1971. Jawaharlal Nehru University.
2. Gorme, Khemchand Koyalaji. Regionalism and politics with special reference to Marathwada Region. Marathwada University.
3. Kulkarni, Ratnakar Raghawendra : Administrative problems of reorganised Karnatak State. Karnatak University.
4. Mishra, Ramashraya. Bharat-Afghan sambandh, 1947-74 (Hindi). University of Jabalpur.
5. Solomon, Elizabeth Gershon. Arab Israel conflict in context of the big power politics, 1956-57. University of Poona.
6. Thomas, Cyriac. The Church and politics in Kerala. University of Kerala.

Economics

1. Dhongade, Manik Pandharinath. A study into the relationship between size of holding and productivity in Indian agriculture. University of Poona.
2. Hiremath, Ningabasayya Sanganabasayya. Economic planning and development in Karnataka State : A case in regional planning and development. Karnatak University.
3. Pandey, Om Prakash. Manaviya sansadhanon ka upyojan aur Bghelkhand ka arthik vikas. Awadhesh Pratap Singh University.

4. Raipuria, K.M. Comparative cost and social prices in export planning in India : A case study of cotton textiles. Jawaharlal Nehru University.

5. Tripathi, Indramani Prasad. Vindhya kshetra ke koyla khadan udyog mein shrmikon ke dshayen : Ek adhyayan. Awadhesh Pratap Singh University.

6. Venkata Reddy, C. Commercial banks and agricultural finance in Anantapur District : An empirical study. Sri Venkateswara University.

Education

1. Balasubramanian, P.S. A critical study of the strategies adopted for the installation of innovations in high schools in Vellore, Tamil Nadu. M.S. University of Baroda.
2. Bhattacharya, Purnendu. A critical study of the science education in Assam and Meghalaya schools. Gauhati University.
3. Koppar, Bina Dharendra. An inquiry into factors affecting reading comprehension in English. M.S. University of Baroda.

HUMANITIES

Philosophy

1. Godse, Vidya Sadanand. A critical study of the system of main philosophical concepts in the Yoga Sutras of Patanjali with special reference to its dualistic/nondualistic character. University of Poona.
2. Gopalakrishnaiah, Vellanki. Philosophy of Jose Ortega Y. Gasset. Andhra University.
3. Hajra, Madhumati. Bertrand Russell's theory a knowledge. University of Calcutta.
4. Same Be. Impact of Buddhism on Cambodian social life. University of Poona.
5. Vyas, Nitinkumar Jayantilal. Problem of evil : A study in comparative religion. M.S. University of Baroda.

LANGUAGE & LITERATURE

English

1. Chakravarty, Tapas Kumar. Growth of O'Neill's vision : A study through his major plays. Berhampur University.
2. Chaporkar, Gajanand Dattatrey. [Joseph Addison (1672-1719) as critic. Vikram University.
3. Vijayalakshmi, P. Frontier theme in Cather's novels. Andhra University.

Sanskrit

1. Dadhich, Purushottam. Sanskrit pryog-vaigyan tatha Kalidasiya rupak. Vikram University.
2. Rajimwale, Shreekant Gajananmaharaja. A study of the Srauta-ritual of the Kanvas with reference to the Padarthadipika of Samarajabhatta. University of Poona.
3. Saraf, Ram Krishna. Kalidas ke rupakon ka shastriya adhyayan. University of Jabalpur.

4. Tripathi, Suryamani. *Gruh Puran : Ek samajik adhyayan.* Awadhesh Pratap Singh University.

5. Venkatesara Rao, Kesiraju Veera. *Social conditions as revealed in the Bhanas and Prahansas of Andhradesa.* Andhra University.

Hindi

1. Chandra, Vijay Banadeo. *Ahirani boli aur uske lok sahitya ka adhyayan.* University of Poona.

2. Desai, Parukant Devasibhai. *Hindi upanyas sahitya Kee vikas parampara mein sathottari upanyas.* M.S. University of Baroda.

3. Gangawane, Kamalakar Haribhau. *Kathakar Rangeya Raghav.* Marathwada University.

4. Hoonka, Krishna Kumar. *Bundeli paheliyon ka sanskritik evam sahityik adhyayan.* University of Jabalpur.

5. Jain, Pukhraj. *Ritibudh kavyadhara ke sandarbh mein Rasleen ka anusheelan.* Vikram University.

6. Jain, Pushpalata. *Balaghat jile ke Marari Boli ka bhashavaigyanik adhyayan.* Nagpur University.

7. Jayaswal, Hiralal Mohanlal. *Premchandottar Hindi kahaniyon mein madhyavargiya jivan.* Nagpur University.

8. Mishra, Kaushal Prasad. *Baghali aur Awadhi ka tulnatmak adhyayan.* Awadhesh Pratap Singh University.

9. Salvekar, Vasanti Madhukar. *Nathuram Sharma Shankar ka Hindi kavya : Aryasamaj ke sandarbh mein.* University of Poona.

10. Sharma, Hariprakash. *Nirala ke sahitya mein samajik chetana.* Awadhesh Pratap Singh University.

11. Sharma, Krishna Dayanand. *Chatushtaya ke atirikt Chhayavadi kavi aur unka kavya.* University of Poona.

12. Veerappa, Hebballi Veerasangappa. *A comparative study of Hindi and Kannada dramas, 1900-1950.* Karnatak University.

13. Venkatakrishnan, R. *Hindi-Tamil bhakti kavya mein vatsalya ras : Ek tulnatmak adhyayan.* Sardar Patel University.

14. Vyas, Sanatkumar Ramcharan. *Gajanan Madhav Muktibodh ke kavya tatha katha sahitya ka shaileevyagyanik adhyayan.* University of Poona.

Urdu

1. Mohammad Sadullah, Mohammad Samullah. *Mir Jafar Zatailli : Life and works.* Nagpur University.

2. Nasima Begum, M. *Progressive literary movement and Urdu short stories.* Utkal University.

Persian

1. Rab, Abdul. *Niamat Khal Ali : Shakhsyat, fan aur karname.* Nagpur University.

Assamese

1. Sreenivasaiah, Nagaraja Keralapur. *A descriptive analysis of Khasi.* University of Poona.

Marathi

1. Jadhav, Prafulla Lata Sharadchandra. *Sant Ek-nathandya ekandar vangmayat va visheshta tyanchya abhang gavhani bharund rupkanya sarakya sfut rachhat vyakt hona ya bhaktibhavach swarup.* Vikram University.

2. Joshi, Keshav Ramchandra. *Gyaneshwari : Sidhyog-darshan.* University of Poona.

3. Kulkarni, Madan Pandurang. *Marathi pradeshik kadambari : Tantra aani swarup.* Nagpur University.

Bengali

1. Bhattacharyya, Ratneswar. *Kabya-o-Sangiter aloke Rabindranathergan.* University of Calcutta.

2. Ghosh, Bratischandra. *Prag adhunik Bangla kabyo rupak-o-pratik.* University of Calcutta.

3. Ghosh, Debadas : *Bangla natake apradhan charitra.* University of Calcutta.

4. Ghosh, Jayasri. *Bangla sahitye stri charitrar bibartan: Adi yug haite unabinsa satabdi.* University of Calcutta.

Oriya

1. Acharya, Satyanarayana. *Bhanja sahityare bisaya-binyasa.* Berhampur University.

2. Acharya, Sudarsana. *Technics of Oriya kavya.* Berhampur University.

Tamil

1. Manivel, M. *Kaikalai in Tamil literature.* Madurai Kamaraj University.

Telugu

1. Motadoo, Gopal Shankar. *Studies in Telugu syntax.* University of Poona.

2. Narasimha Rao, Attaluri. *Tilak kavita tatvam.* Andhra University.

3. Narasimha Reddy, P. A. *A linguistic study of Amuktamalyada.* Sri Venkateswara University.

4. Sirisha, M. Chandra. *Social novels in Telugu by women novelists.* Sri Venkateswara University.

5. Veeraprasada Rao, A. *A critical study of the works of Raghunatha Nayaka.* Sri Venkateswara University.

6. Venkatasubbaiah, R. *Linguistics peculiarities in the works of Palakurki Somana.* Sri Venkateswara University.

Kannada

1. Krishnarao, Parvati Raukmini. *Ambika tanayadattara bhava geetengalu.* Karnatak University.

Geography

1. Wadwankar, Shaila Vishwanath. *A geographical study of linguistic minorities in India.* University of Poona.

History

1. Desai, Gunvantrai Jagdishbhai. *Critical and cultural study of Kaumarika Khand.* M.S. University of Baroda.

2. Ghanta, Jawaharlal. *Jainism in Andhra as depicted in inscriptions.* Nagpur University.

3. Khulbe, Maya. *Prachin Jain evam boddh dharmon mein istriyon ka yogdan.* University of Poona.

4. Lad, Gouri Purushottam. *Archaeology and Mahabharata.* University of Poona.

5. Tulavardhana, Phasook. *Impact of Hindu and Buddhist philosophy on arts in India and Thailand.* M. S. University of Baroda.

6. Vohra, Dewan Chand. *India's aid diplomacy in the Third World, 1947-75.* Jawaharlal Nehru University.

CURRENT DOCUMENTATION IN EDUCATION

A list of select articles culled from Periodicals received in AIU library during August, 1979

EDUCATIONAL PHILOSOPHY

- Hart, W.A. "Against skills". *Oxford Review of Education* 4(2); 1978 : 205-16.
- Phillips, D. Z. "Is moral education really necessary"? *British Journal of Educational Studies* 27(1); Feb 79 : 42-56.
- Steinberg, I.S. "Abuse of education". *Oxford Review of Education* 4(2); 1978 : 185-96.

EDUCATIONAL PSYCHOLOGY

- Driver, Rosalind. "When is a stage not a stage? A critique of Piaget's theory of cognitive development and its application to science education". *Educational Research* 21(1); Nov. 78 : 54-61.
- Mishler, Mary Macdonald. "Education and identity". *Oxford Review of Education* 4(2); 1978 : 197-203.

EDUCATIONAL SOCIOLOGY

- Bereday, George Z.F. "Social stratification and education in industrial countries". *Comparative Education Review* 21 (2-3); June-Oct. 77 : 195-210.
- Foster, Philip. "Education and social differentiation in less developed countries". *Comparative Education Review* 21(2-3); June-Oct. 77 : 211-29.
- Luithui, Ela Dutt. "Education, unemployment and youth unrest : The South Asian Syndrome". *Prospects* 9(1); 1979 : 85-90.

EDUCATIONAL PLANNING

- Hodgkinson Harold L. "Education in 1985 : A future history". *Educational Record* 69(2); Spring 79 : 129-36.

EDUCATIONAL ADMINISTRATION

- Brown, Elizabeth, A.R. "Faculty evaluation of administrators: The experience of Brooklyn College". *A.A.U.P. Bulletin* 64(4); Dec. 78 : 298-304.
- Fessas-Emmanouil Helen D. "Why integrate educational and community facilities". *Prospects* 8(4); 1978 : 406-20.
- Gaff, Jerry G. "Involving students in faculty development". *New Directions for Higher Education* (24); 1978 : 59-71.
- Goel, Suresh C. "Selection procedures for faculty positions in universities". *University News* 17(15); 1 Aug. 79 : 403, 406, 415.
- Johnson, Victor O, Ibikunle. "International co-operation for environmental education". *Prospects* 8(4); 1978 : 515-22.
- Nivean, Maurice. "The school and contestation". *Oxford Review of Education* 4(2); 1978 : 131-47.
- Tuckman, Howard P. "Who is part-time in academe?" *A.A.U.P. Bulletin* 64(4); Dec. 78 : 305-15.

CURRICULUM

- Adams, Don. "Development education". *Comparative Education Review* 21(2-3); June-Oct. 77 : 296-310.
- Chiappo, Leopoldo. "Environmental education and the third world". *Prospects* 8(4); 1978 : 456-65.
- Fensham, Peter J. "Stockholm to Tbilisi : The evolution of environmental education". *Prospect* 8(4); 1978 : 446-55.
- "UNIVERSITY—ENVIRONMENT—Society : A Seminar of European Universities". *Higher Education in Europe* 4(1); Jan.-Mar. 79 : 18-19.
- Vidart, Daniel. "Environmental education : Theory and practice". *Prospects* 8(4); 1978 : 456-79.

TEACHING

- Redditt, Paul I and Hamilton, William T. "Teaching im-

provement in a small college". *New Directions for Higher Education* (24); 1978 : 27-41.

Romanov, Vladimir Sergeevitch. "Environmental education and professional training" *Prospects* 8(4); 1978 : 508-14.

Springer, Ursula. "Education, curriculum and pedagogy". *Comparative Education Review* 21(2-3), June-Oct. 77 : 358-69.

Stapp, William B. "Instructional model for environmental education". *Prospects* 8(4); 1978 : 495-507.

EVALUATION

Cornelius, M. L. and Cockburn, D. "Influences on pupil performance". *Educational Research* 21(1); Nov. 78 : 48-53.

Eckstein, Max A. "Comparative study of educational achievement". *Comparative Education Review* 21(2-3); June-Oct. 77 : 345-57.

Gaff, Jerry G. and Morstain, Barry R. "Evaluating the outcomes". *New Directions for Higher Education* (24); 1978 : 73-83.

Hambleton, Ronald K. and others. "Developments in latent trait theory : Models, technical issues and applications". *Review of Educational Research* 48(4); Fall 78 : 467-510.

Natarajan, V. "Scientific 'grace' in university examination". *New Frontiers in Education* 9(2); Apr.-June 79 : 79-82.

ECONOMICS OF EDUCATION

Hansen, W. Lee. "Economics and comparative education : Will they ever meet ?" and if so, when ?". *Comparative Education Review* 21(2-3); June-Oct. 77 : 230-46.

PROFESSIONAL EDUCATION

Sasson, Albert. "Environmental education and training of engineers : Unesco activities in the field of environmental education for engineers". *Higher Education in Europe* 4(1); Jan.—Mar. 79 : 14-17.

ADULT EDUCATION

Carrier, Herv'e. "Will lifelong education democratise universities ?" *Prospects* 9(1); 1979 : 91-104.

Daniel, John S. and Marquis, Clement. "Interaction and independence : Getting the mixture right". *Teaching at a Distance* (14); Spring 79 : 29-44.

Mazza, Gabriele. "Tailor-made education". *Forum (Council of Europe)* (1); 1979 : xxiii.

Moss, G.D. "Influence of Open University distance teaching in higher education". *Teaching at a Distance* (14); Spring 79 : 14-18.

COMPARATIVE EDUCATION AND COUNTRY STUDIES

Anderson, C. Arnold. "Comparative education over a quarter century : Maturity and challenges". *Comparative Education Review* 21(2-3); June-Oct. 77 : 405-16.

Kazamias, Andreas M. and Schwartz, Karl. "Intellectual and ideological perspectives in comparative education : An interpretation" *Comparative Education Review* 21(2-3); June-Oct. 77 : 153-76.

Koehl, Robert. "Comparative study of education : Prescription and practice". *Comparative Education Review* 21(2-3); June-Oct. 77 : 177-94.

Nicholls, A.J. "British impact on German education : A triumph for commonsense or missed opportunity ?" *Oxford Review of Education* 4(2); 1978 : 125-9.

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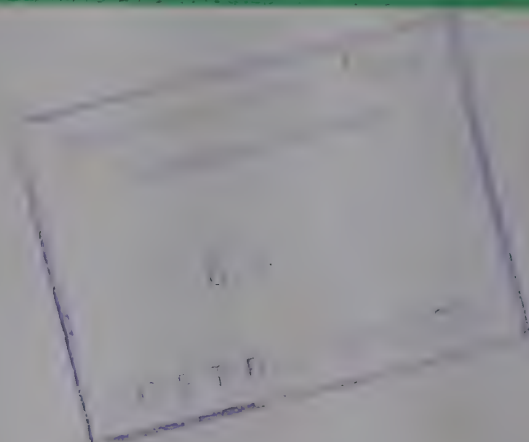
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Applications are invited for the following positions in the Central Library, the Material Science Programme, and the Central Air Conditioning Plants for the Institute buildings and the A.C.M.S. building:

Sl. No.	Name and scale of the post	No. of posts	Prescribed Qualifications
1.	Assistant Librarian in the scale of pay of Rs. 700-40-900-EB-40-1100-50-1300	One (Likely to be increased to three)	Essential (i) First or Second class B.A./B.Sc./B.Com plus First or Second class M.Lib. Sc. degree. OR First or Second class M.A./M.Sc./M.Com. degree plus First or Second class B. Lib. Sc. degree or Post Graduate diploma in Library Science. (ii) Five years' experience in a responsible capacity in a Library of standing. Desirable Knowledge of foreign language other than English and experience in documentation work.
2.	Library Assistant in the scale of pay of Rs. 380-12-500-EB-15-560-EB-20-640.	Eleven (including three posts reserved for S.C. and one post reserved for S.T. candidates)	Essential Graduate with degree or diploma in Library Science (One years' course after graduation) or its equivalent. Desirable (a) Experience of work in College/University or Research Library. (b) Knowledge of English Typewriting particularly catalogue card typing.
3.	Senior Technical Assistant for Material Science Programme in the scale of pay of Rs. 550-25-750-EB-30-900.	One	M.Sc. degree in Physics or Chemistry plus two years' experience preferably in any of the following areas of Material Science: (i) Thin Film/Electronic Materials (ii) Magnetic Materials OR B.Sc./Diploma in Engineering plus eight years experience preferably in a research laboratory concerning any of the aforesaid areas of Material Science.
4.	Mechanic GR. 'C' for Central Air Conditioning Plants for the Institute buildings and the ACMS building in the scale of pay of Rs 260-6-326-EB-8-350.	Three (Likely to be increased to five) (Out of three, one post is reserved for S.C. candidates)	Essential High School plus I.T.I. certificate in Air Conditioning and Refrigeration. Desirable Candidates having above qualification with two years' experience in handling large capacity Air Conditioning Units.

Posts are permanent and carry retirement-benefits in the shape of CPF Scheme or CPF-cum-Gratuity Scheme or GPF - cum - Pension - cum-Gratuity Scheme as may be opted according to rules. The age of retirement is 60 years. During the first year, the appointment will be on probation.

Besides pay, posts carry allowances according to the Institute rules, which at present correspond to those admissible to the Central Government employees stationed at Kanpur. Higher initial pay is admissible to exceptionally qualified and deserving candidates. Candidates called for interview will be paid second class railway fare from the

place of duty to Kanpur and back by the shortest route.

Applications for the posts of Assistant Librarian and Senior Technical Asstt. must be made on prescribed form obtainable free of charge from the Registrar of the Institute by sending a self addressed unstamped envelope of 25 cm x 10 cm- size and for the posts of Library Assistant and Mechanic Gr. 'C' should be made on plain paper, stating date of birth, qualifications, experience, pay and present scale of post now held and other particulars.

Applications for the post of Assistant Librarian and Senior Technical Assistant should be accompanied by an

Indian Postal Order for Rs. 7.50 (Re. 1.87 for S.C./S.T. candidates) and for Library Assistant and Mechanic Grade 'C' accompanied by an Indian Postal Order for Rs. 3/- (0.75 paise for S.C./S.T. candidates) in the name of Registrar, Indian Institute of Technology, Kanpur.

Applications should reach the Registrar, Indian Institute of Technology, Kanpur-208016 on or before October 15, 1979.

S.N.D.T. WOMEN'S UNIVERSITY

1, Nathibai Thackersey Road
BOMBAY-400 020

Applications are invited on prescribed forms (8 copies) available from the University Office, Bombay, on payment of Rs. 5/- (by M.O. or cash) for the post of PRINCIPAL, S.N.D.T. Arts and Commerce College for Women, Pune-4, so as to reach the undersigned not later than October 25, 1979.

Qualifications and Experience

(a) Doctor's Degree or research work of an equally high standard in one of the subjects under Arts or Social Sciences.

(b) A consistently good academic record at the Master's level with at least first or high second class or equivalent degree of a foreign University, preferably in a subject under Arts or Social Sciences.

(c) About 10 years experience of teaching and/or research and about 5 years administrative experience at an educational institution of higher learning. Experience of guiding research at doctoral level and organising extension work will be considered added qualifications.

Salary Scale

Senior Scale

Rs. 1,500-60-1,800-100-2,000-125/2-2,500+admissible allowances (Total initial emoluments about Rs. 2,000/- per month).

OR

Junior Scale

Rs. 1,200-50-1,300-60-1,900+admissible allowances (Total initial emoluments about Rs. 1,700/- per month).

Note

(1) Only suitable candidates will be called for interview.

(2) Other things being equal preference will be given to candidates belonging to Scheduled Castes/Tribes and other Backward Communities.

(3) Scale will be offered keeping in view the qualifications and experience of the candidates.

(4) Proficiency in Marathi essential, besides fluency in English.

(5) Higher starting salary may be considered in exceptional cases; if recommended by the Selection Committee.

(Smt.) Kamalini H. Bhansali
REGISTRAR

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Hony. Editor : ANJNI KUMAR

Farm Education for Rural Development

B.V. Venkata Rao*

In the years after independence, there has been an enormous increase in agricultural education and research activities involving a huge annual financial outlay of the order of Rs. 200-300 crores. We have presently 22 Agricultural Universities and a sizeable number of Agricultural Colleges outside of their purview in some states.

In terms of potential for agricultural production, we have soil, water, plant and animal and human resources which compare favourably with those in any other developed part of the world. In spite of all these, more than half of our people are below the poverty line, unable to secure two square meals a day.

This mis-match between resources and quality of lives of people is largely the result of lack of relevance of our educational programmes to the needs of rural masses. How the curricular content of agricultural educational programmes could be modified to be in harmony with the problems that confront the farmers in their agricultural enterprise is the question.

Crop and animal production constitute the two basic aspects of agricultural activity. To understand the phenomenon of living organism whether it be a plant or an animal, a sound knowledge of environment, physiology, nutrition, genetics, health and finally husbandry and processing of products therefrom is inescapable besides micro and macro socio-economic of these production processes.

The broad categories for which College Graduates would be required are (i) agricultural extension and rural development administration (ii) management of private and state farms, (iii) input, marketing and credit services (iv) planning, executing and evaluation of projects and (v) higher education, research and advisory functions.

The professional training for agricultural extension and rural development functionaries requires comprehensive programmes of teaching in general agricultural with not too much emphasis on specialisation. A sound knowledge of production processes and techniques with appropriate emphasis on socio-economic aspects would be adequate, while the training for those who go into research or teaching requires high level specialised knowledge.

The time of a student in an agricultural college could be more productively used in studying agricultural subjects, if the level of instruction in basic subjects like chemistry, botany, zoology, physics and the like taught in the pre-university courses are

(Continued on page 506)

University of Agril. Sciences, Bangalore.

Physics in Indian Universities

B. M. Gupta*

P. R. Bose

Introduction

For the formulation of any scientific policy, it is necessary to have sufficient information on resources on personnel, equipment, funds, etc. Since the collection of this information is not well organised in developing countries, the task of science planners in these countries have become more complex and difficult. The spectrum of work of these planners range on one hand to settle the inter-sectoral priorities to the balance determination between basic and applied research, on the other hand. They are also to deliberate between the choice of disciplines to be emphasised. Between individual disciplines, how best to draw a line of distinction between classical areas and new emerging areas, etc. Infact, quantitative studies in science policy go a long way in assisting science planners to arrive at a rational decisions about problems confronting them. The present paper is a modest attempt to look at quantitative assessment of physics research efforts in Indian Universities. In any study of this nature the formidable difficulty is in collecting reliable information. Since no readymade statistics is available on the physics research output in India, we have relied on the data available in Physics Abstracts for 1973.

R&D activities

The resources devoted to science and technology in India have expanded considerably during the last three decades following the independence. The expenditure on R&D and related activities have increased from a marginal figures of Rs 1.10 crores in 1948-49 to well over Rs 448.13 crores in 1976-77. During the years 1975-76 and 1976-77, about 89% of the expenditure was incurred by government sources and the rest by private sources. Research in the university sector is mainly financed by University Grants Commission besides Central and State Government depending upon affiliation. There are also agencies like Department of Science and Technology (DST), Council of Scientific and Industrial Research, ICMR, ICAR, Department of Atomic Energy & Space, INSA which also provided funds to the researchers by way of fellowships, grants, etc to support projects in their own priorities areas. University Grants Commission, of late has been making concentrated efforts to promote research in the universities. Besides project based support to individual research works, the Commission also provides the core support for research to every University. The Science Council was set up in early 1974 to advise U.G.C. with regard to the development of scientific research. However, the amount of money devoted to University sector in R&D is very small in relation to R&D funds provided in other sector.

Very little reliable information is now available about expenditure in universities that could be regarded as falling in the category of R&D outlays. However, the grants made by UGC for research and advanced study in the science, research fellowships, etc has been estimated to have increased from Rs. 2.51 crores in 1974-75 to Rs. 5.45 crores in 1976-77. Even no detailed estimate is available about the possible breakdown of R&D expenditure in university sector subject-wise.

Growth of Physics departments in universities

In our country, physics research is carried out under the auspices of institutes under central government and state government, industrial houses and research associations; and universities and colleges. However, a major component of the research is carried out in the academic sector mainly universities. At present there are about 150 universities besides 10 institutes deemed to be universities and 5 IITs. In a cyclostyled directory prepared by UGC in 1975-76, it has been indicated that there were 79 universities which have established physics departments by 1975-76 but information regarding the year of establishing of these departments is provided only for 69. Taking the growth of physics departments in Indian universities, one finds that there are 13 universities which have established their physics departments until independence.

Calcutta, Banaras and Aligarh were the first three universities, establishing their department upto 1920, followed by Lucknow, Allahabad, Delhi, Indian Institute of Mines, Osmania and Annamalai in 1920's. However, the growth in 1930's was very slow, and Andhra and IIS, Bangalore were the only two universities, establishing their physics department in this period. After independence upto 1957, the growth of physics departments were slow, and on an average, there was addition of one department per year. This was the period when the major expansion in the university system took place. After 1962, a major expansion of physics departments took place and about 18 departments were established during 1963-67. This was the period, when UGC was set up a slightly earlier, which provided the basic support and encouragement. Also at this time, UGC was headed by a famous physicist Dr D.S. Kothari. It is because of his vision that necessary support was provided to the support of science activities in the universities. Because of basic foundations laid by Dr. Kothari, physics research continued to get necessary support. As a result, one finds that the growth of physics departments almost grew at same pace as one can see in the period mentioned earlier. In 1963-67 and 1968-72, the number of physics departments set up were 11 and 14 respectively.

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Contribution of papers by various universities

In all 2303 publications are published in physics research in India, out of which a major portion 1616 have come out of academic sector. Within the academic sector, 1412 papers came out of university departments only. In Table I (given at page 501) is provided the cumulative growth of publications from various universities. There are although large number of universities engaged in physics research, bulk of activities is concentrated only in few universities. About 50 per cent of contribution to the university output is made by 7 universities alone. These are: IITs at Kanpur, Madras, Delhi; Allahabad; Banaras; Delhi; and Indian Institute of Science, Bangalore. The largest contribution is made by Banaras Hindu University with 193 papers. For the purpose of discussion, we can divide the above universities into two categories. In the first category comes all the universities other than IITs which are very old and have established their physics departments in the early 20's and 30's. They have by now established large and good research groups. In the second category comes the IITs, which are comparatively much new and established the physics departments in 60's and 70's. The large number of publications from these universities is mainly because of the availability of more resources in terms of money, qualified manpower, comparatively better research environment and faster mobility of scientists.

Subject-wise distribution

In this section, we will discuss the distribution of paper subject-wise. Since we have taken all our data from the analysis of contents of Physics Abstracts, we found it convenient to take the subject classification provided by Physics Abstracts as our base for analysis. Under this classification, the whole of physics has been divided into 8 broad sub-areas and seven inter-disciplinary sub-areas. In Table 2 (given at page 501) is provided the broad subject-wise distribution of university output. The largest number of papers have been contributed by the "Condensed Matter" sub-area, forming about 30 per cent of the total university physics output. This is quiet in tune with the large output of this area at both national and international level. The large output of this area at both national and international level is because of number of reasons. Firstly, study of properties and structure of materials under different conditions is of interests to scientists, engineers and technologists and have direct linkage with economic development in a country besides of immediate application. This area offers a wide scope and flexibility in research on new materials, alloys or substances which can be studied for various type of properties by using different types of instruments. It has wide applications in diverse fields like space and nuclear, physics, electronic devices, plastic, etc. Research activity in this area is rapidly increasing during the last few years. In majority of the universities, there are groups, big and small, working both in theoretical and experimental problems. At present this area is the most popular area of research in the country.

This can be seen from the fact that out of 65 universities contributing to the total university output, 50 also participated in research in this area. There are about 13 major groups in these universities in this area. Notable among these groups are those with output: Banaras (60); Allahabad (51); IITs at Delhi (44); Madras (43); and Kanpur (30); Andhra (27); Delhi (21); Roorkee (21); Lucknow (19); IIT at Kharagpur (14); Baroda (10) and SV University (10) in the descending order. Major emphasis of work in the area seems to be areas such as: optical materials and condensed matter spectroscopy (78 papers); lattice dynamics (77 papers); crystallography (70 papers); Transport Properties (45 papers); Mossbauer effect (39 papers); and dielectric properties and materials (34 papers), etc.

Gases, fluid dynamics and plasmas constitute the next active area in physics research in universities contributing more than 13 percent to its output. Major areas of current emphasis are fluid dynamics (13) and plasma physics (49). Considerable portion of the research in this area can be carried out theoretically. For example evaluation of characteristics of plasmas can be studied under wide range of conditions. This can also be checked with experimental data later on. The relevant data in this area to be collected requires the facilities of balloons, rockets, etc. During the last few years, increasing facilities have been provided to Indian scientists in this area, which had made possible such large number of publications. Several groups in the universities numbering 27 have been engaged in research in this area. Notable among these groups are with output: Banaras (31), Indian Institute of Science, Bangalore (15), IIT, Bombay (13), IIT, Kanpur (11), and Rajasthan (10).

Work in atomic and molecular physics has been in progress in many universities from the beginning of scientific research in the country. Infact, this is by far one of the oldest and most common areas of research after condensed matter in the country. As a result we find that 30 universities have groups engaged in the research in this area. Soon after Raman effect was discovered, many schools sprang up in universities in this area. This was one of the areas in which pioneering work was done not only by Raman and his co-workers but also by his students and grand students. Because of its old tradition, it has produced maximum number of Ph. Ds in the country. Research in this area is very flexible and mostly of theoretical nature. This area has contributed about 11 percent to the total university physics output. Notable among the groups working in this area are those of Banaras (43), Delhi (15), Allahabad (15), Gorakhpur (14), IIT, Kanpur (7), Annamalai (9). Major concentration of research is area of molecular physics contributing 146 out of 184 in this area.

Research in the area of mathematical physics is mainly of theoretical nature and requires mathematical knowledge and skill. This area contributes about 8 percent to the total university physics output. Major emphasis of research seems to be traditional

areas like classical mechanics (57), relativity and gravitation (23), statistical physics and thermodynamics (15). Research in the area is although scattered in large number of mathematics and physics departments, but there is no major concentration of efforts. The two larger groups in this area as identified by our data are at Indian Institute of Science, Bangalore (16), and Indian Institute of Technology, Madras (10).

The organised research in nuclear science began in India with the founding of Tata Institute of Fundamental Research. This institute became the cradle of India's atomic energy programme. As the work in atomic energy expanded, scientists were moved to Bombay, where a separate unit—The Atomic Energy Establishment was set up in 1954, later changed its name to Bhabha Atomic Energy Centre in 1967. Today it is one of the largest centres of nuclear research in the country. Most of the research is concentrated in research institutes, but some basic nuclear physics studies are conducted at universities also. Research in the universities is mainly lagging because of the non-availability of equipments like big accelerators. In case of theoretical nuclear physics also, the limitation is that theorists need experimental data churned by machines, for every meaningful systematization of their ideas. As a result, due to paucity of gigantic experiments in the country, researches had to depend on data produced elsewhere. This area contributes more than 5 percent to the total physics output. Major concentration of research is in areas of the study of nuclear structure (48) and nuclear reactions and scattering (53). Hardly any large research groups exist in universities although many universities are coming forward to undertake research in this area. More recently, conscious efforts have been made in the country to develop viable groups at Andhra, Calcutta, Aligarh, Delhi and Punjab, etc.

Elementary particle is another theoretical area of nuclear physics where some work is going on the university sector, contributing slightly more than 5 percent to the total research output in physics. The research activity in this area is of relatively recent origin. The level of research in this area is of very high order in the country; and is comparable with any country in the world. Concentrated efforts were made at TIFR in late fifties to develop and collect a viable groups of students in this area. More recently, conscious efforts have also been made to develop such able groups at Delhi, Kanpur, Jadavpur and Madras.

The other branches where the noticeable amount of work has been published are : Geophysics and earth science (88), electromagnetism and optics (47), materials science and metallurgy (43), astronomy and astrophysics (25) and general physics (58). Among sub areas of geophysics and earth sciences, about 30 percent of work is reported on ionosphere with 27 papers. The other important areas are devoted to the study lithosphere (16), low atmosphere and meteorology (12), upper atmosphere (10) and geophysical instruments & techniques (10), etc. In case of electromagnetism and optics research efforts have been con-

centrated in areas namely optics (19), particle beams and particle physics (13). In sharp contrast to this, research in the area of astronomy and astrophysics has been scattered in large number of areas namely theoretical astrophysics (8), solar systems (7), stars (5) etc.

Media and place of publication

To measure, where the scientists publish, is an important indicator of strength of research. In Table 3 (given on page 501) is provided geographical distribution of papers published by Indian scientists. It is observed that a major portion, 64.8%, of the University output is published in foreign journals. There are number of reasons why Indian scientists prefer to publish in foreign journals. These are: (i) reference assessment in objective and helps the author in improving his manuscript; (ii) better and quick coverage in national and international abstracting/indexing/current awareness services; (iii) high standard (iv) better circulation, (v) availability of specialised and letter journals etc. In our data among foreign countries, the largest number of papers are published by Indian physicists in United States and United Kingdom. Journals published from Netherlands, West Germany, Switzerland, Italy and Japan serve as a media for considerable number of contribution emanating from India. Among the foreign journals the major Indian contribution is published in journals: Pure and Geophysics, Netherlands; Journals of Physical Society of Japan; Phys. Status. Solidi; Physics Review (various sections); Letter Nuove Cimento; Acta Crystallogr. A; Chem Phys. Lett.; Journal of Physics (All sections), etc. Among the Indian contribution, more than 50 percent is published only in 7 journals. There are Indian. of Pure & Applied physics; Indian J. of physics; Indian J of Meteorology and Geophysics; Current Science; Indian J. of Pure & Applied Mathematics; Indian J. of Radio & Space Physics, Proc. of the Indian Academy of Science.

Summary

There are few observations which need to be highlighted in this small survey. Firstly it is observed the output of publications from University sector is very large as compared to the research institutes in the country. On the one hand, the funds allocated to universities are very small in comparison to research institutes. In fact, we cannot strictly compare the outputs from these two varieties of institutes straightaway because research output from research institutes comes in other important forms also like through patents, reports. However, comparison of papers do provide some idea about this gap. Secondly, one finds that major portion of the work in the universities is of theoretical nature and has little practical application. Thirdly, in selecting media of publications, the scientists prefer to publish at large number of their paper in foreign journals. This means that some steps should be taken to strengthen the Indian journals so that their best research contribution can be attracted in Indian journals.

Table 1
Cummulative contribution of Papers from Various Universities

Range of Papers	Number of Universities	Number of Papers	Cummulative Number of Papers
150-199	1	193	193
100-149	1	101	294
75-99	5	419	713
50-74	1	72	885
25-49	8	294	1079
15-24	6	111	1190
10-14	7	84	1274
5-9	13	87	1361
Less than 5	23	49	1410

Table 2
Subject-Wise Distribution of Papers in Universities

Area	Number of Papers	Area	Number of papers
General Physics	58	Interdisciplinary Areas	
Mathematical Physics	111	Material Science & Metallurgy	43
Electromagnetism & Optics	47	Physical Chemistry	11
Elementary Particle Physics	76	Geophysics. Earth Science	88
Nuclear Physics	73	Cosmic Ray	3
Atomic & Molecular Physics	184	Astronomy, Astrophysics	25
Gases, Fluid Dynamics & Plasmas	185	Biophysics	1
Condensed Matter	502	Applied Acoustics	5
			Total 1412

Table 3
Geographical Distribution of Publishing Activity of Scientists in Universities

Country	No. of Papers	Country	No. of Papers	Country	No. of Papers
India	496	Denmark	24	Turkey	5
U.S.A.	236	Canada	15	Hungary	4
Great Britain	223	France	14	Israel	3
Netherland	106	Poland	10	Australia	3
Germany	100	Austria	7	Spain	2
Japan	55	Czechoslovakia	6	Sweden	2
Italy	46	Yugoslavia	5		
Switzerland	45	Romania	5		
			Total	1412	

Developing an Effective Model of Non-formal Education

Motilal Sharma*

Non-formal education

The relevance of education to rural development was fully recognised at the Pan African Conference held at Kericho, Kenya, in 1966, as the following quotation from Sheffield (1977) makes clear :

“One of the chief tools with which to achieve.... rural transformation is education and training in their many forms—as much the education of the adult farmer in new techniques and attitudes, as much training in co-operation and the management of credit, as much the education of women as the education of children and adolescents in formal schools and universities.....a more significant contribution to rural development can be made by a strengthened, more clearly thought out and effectively co-ordinated educational service to adults, than by alterations in or expansion of the existing systems of primary and secondary schools.”

These observations are further strengthened by the thesis propounded by Schultz in his presidential address to the American Economics Association in 1960, when he said that ‘unexplainable’ economic outputs could be accounted for by investment in human capital”, presumably largely through education.

Such is the importance of ‘education’ component in human life and national growth. On the other hand illiteracy is a growing problem in today’s world. It has been estimated that there are 110 million more illiterates in the world today than there were in 1951. The majority of that increase has occurred in the developing world (Ward and Herzog, (1974). This poses special problems for nations including India that are struggling for development. In India the literacy percentage is as low as 30%. Some thinkers assume that literacy is a necessary precondition for development whereas there are educationists who recognise that illiterate populations are very capable of learning what they need to know to adjust and contribute to development even though they cannot read yet. Ward and Herzog (1974) state that ‘unless lesser developed countries can break out of the ‘literacy first’ perception of education, they are dooming huge percentages, and often increasing numbers of their citizens of continued ignorance, powerlessness and poverty’. We do not deny that ‘literacy is a useful skill for people in the process of development. But, we do deny that reading is the only way to learn the knowledge and skills necessary for development. People who cannot read can develop and

achieve maturity and leadership capability if knowledge is made available to them through modes and channels which do not require prior literacy skills among the learners. This situation demands development of instructional experiences which will *effectively communicate* knowledge necessary for development to people illiterates, semi-literates, and educated simultaneously. It warrants for an integrated effective system of learning which provides opportunity for all three modes of learning, i.e. (i) informal ; (ii) formal ; and (iii) non-formal, and flexible learning environment. Coombs and Ahmed (1974) equate education to learning. I intend to agree with this view. Coombs and Ahmed (1974) define Non-formal Education as : “.....any organised, systematic, educational activity carried on outside the framework of the formal system to provide selected types of learning to particular sub-groups in the population, adult as well as children”. La Bella (1975) says that “Non-Formal Education refers to organized out-of school educational programmes designed to provide specific learning experiences for specific target populations.” La Bella does not treat three modes of education as discrete entities but he treats them as modes of emphasis or predominance. Illich (1970) and Freire (1970) conceived of Non-formal Education as anti-formal education, although in two different senses. In response to this ideological attack over loaded with anti-schooling bias Bock and Papagianis (1973) noted that ‘non-formal’ suggests that there is very little or non-formal structure; it suggests a highly participative, non-hierarchical and spontaneous learning environment where all participants are both teachers and learners... Grandstaff (1973) views Non-formal Education as a major new component in nation-state development.

It is obvious from the observations given above that non-formal education system could be seen as a planned instructional design to create a more flexible environment for the learner to teach towards a goal determined in consultation with the learner. This gets further support from Case and Niehoff (1976) where they say that ‘non-formal education is a deliberate process of communicating ideas and developing skills in adults and out-of school children which will help them increase agricultural production, qualify them for, or increase their performance in, positions in government, industry and commerce, attain higher health standards ; participate more intelligently in civic, economic and political groups; and achieve other personal and social goals. The types of activities are extremely varied, highly focussed

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on specific learning objectives, and of varying duration. Thus we can say that 'non-formal education is education by objectives'. It could be said that Non-formal Education focuses on improvement of social and personal living, occupational capability and vocational competency. It aims at sociopolitico-economic growth of individual as well as nation. It is more flexible and the learning environment is more characteristic of out-of school learning. It is deliberately planned with a motive to bring educational opportunities closer to the people and to open more alternatives to formal schooling experiences. It allows the aspirations to formal schooling experiences. It allows the aspirations of the participants to function as powerful formative elements in programme planning and design. There is emphasis on low per capita instructional cost. It is need centred and could be defined as 'learning by objectives'. Added to this 'conscientization' the concept given by Freirs is another important element to be considered in context with NFE Platt (1976) emphasises the importance of 'conscientization' and says that I would offer that 'initial learning systems' are designed to help people to evolve out of dependency, to master the ability to learn, and to acquire skills to participate in the life and work of their communities. In fine one could say that non-formal education is an active, critical, dialogical educational programme which aims at helping new to learn help themselves, to place them consciously critical confrontation with their problems. Thus it aims at increasing their ability, by helping all human beings to rise from the status of object (oppressed) to the status of subject to perceive the challenges of their time and encounter with the same. Thus, developing integrated authentic human being is THE aim of NFE.

Systems approach to non-formal education

The systems concept provides a framework for visualizing internal and external environmental factors as an integrated whole. It allows recognition of the proper place and functioning of sub-systems. The degree of 'wholeness' makes the whole something different from, and more than, the individual units considered separately. The way to look at the whole system is in terms of plan (organized from the interrelated components) where planning means laying out a course of action that we can follow, that will take us to our desired goal. Hence systems approach to problem warrants that a piece-meal approach is replaced by an overall approach. Barrow (1976) in his key-note address delivered at APLET international conference emphasised that physicians must have skill of dealing with 'total patient'. Systems approach is based on the concept of 'wholeness'. Systems approach interprets systems in 'wholeness terms'.

If one peeps into the expenditure incurred on education by different countries of the world during the last one decade, one will find that budget of education has increased significantly and it will certainly be higher in coming years. Even after spending too much money we have not been able to pro-

vide education to all children of school-going age. We have not been able to make all human beings literate. In some areas, we are facing shortage of man-power whereas in certain others, we find unemployment among the educated. Besides these global problems, we find our teaching methods ineffective and teaching unproductive. Students, parents, employers, leaders are not happy with the quality of education. Secondly systems approach is one of the techniques which aim to find the most efficient and economically intelligent methods. Again, it is not new to apply systems theory to education. Educational technologists Finn (1956), Hoban (1956) and Heinrich (1970) among others, have convinced us that we need to take a 'systems approach' to education. The concept like 'system' and 'systems Approach' have been frequently discussed in context with education by Bern (1967), Corrigan and Kaufman (1966), Basson and Heinich (1966), Kaufman, Corrigan, Corrigan, and Goodwin (1967), Manch (1962), Silvern, (1968), Hayman (1974), Mitchell (1975), Winn (1975), Mitchell (1970), Banghart (1969), Lehanam (1968), Shoemaker (1972), Dederick and Saturage (1975).

First requirement of system specialist for planning for reordering of the existing system or planning a new system is detailed information about the system that exists. Many different types of data are needed. The quality and objectivity of the data collected and the form in which they are presented to decision-makers will deeply influence the systematic planning. Good data make possible continuing re-formulation of sensible objectives and clear deliberation on the best means of achieving them. In case of planning Non-formal Education system following basic data will be needed:

- 1) Enrolment figures for all levels of education.
- 2) Percentage of drop-outs and repeaters at all levels.
- 3) Percentage of school age population not receiving any education.
- 4) Number of educated persons and skill specialists available in the community.
- 5) Number of qualified teachers available in that community.
- 6) Professional Training facilities available.
- 7) Inventory of school buildings and buildings that could be used for educational purpose in the community, instructional materials, equipment, estimates of utilisation rate.
- 8) Budgets available and budgetary constraints.
- 9) Adult (or continuing) education facilities, and estimated participation.
- 10) Adult literacy figures and information about each illiterate.
- 11) Vocational training statistics.
- 12) Shortage of skilled manpower in the economy.

Besides this the statistics, if they are to be useful in planning, must include enough information on the past and the future (projections for time to ten years ahead) to reflect populations trends, village to city mobility and changing economic and social requirements. Comprehensive data collection tends to high-

light all kinds of things that previously had been overlooked. Attempt may also be made at identifying the results of the existing educational system.

Resources....their allocation and use....are central to educational system planning. When planning a new educational system make sure of adequate resources. These resources could be categorised under (i) money, (ii) manpower, (iii) equipment/buildings and (iv) programme materials. All are essential in the right amounts of the right quality for the right period of time ahead if a new system is to succeed. It demands programme budgeting, which relates expenditure directly to objectives, and which groups manpower equipment, and buildings into functional programmes. With this background the author initiated the work of designing the present project.

Emergence of the project

The present project has emerged out of conviction. The Department of Education has been working in the area of NFE since 1975. Secondly, the author had, before designing this project, experience of working with NFE programmes being conducted in the rural areas in the State of Rajasthan and had already completed one project on NFE under Commonwealth Education Fellowship of U.K. Besides this his experience of working with Motilal Wadi in Surat (a Harijan Community) further strengthened his belief that the idea of NFE in *totality* warrants to be tried out in rural setting.

Furthermore, since NFE is relatively a new and emerging concept hence one cannot expect of availability of very many models of planning, implementing and evaluating NFE programmes. This further warrants an urgent need for developing systematic strategies which can help administrators in administering NFE programmes and can also help practitioners in implementing NFE programmes. All these experiences provided impetus to take up the present project which has been worded as follows:

“Developing an Effective Model of Non-formal Education for Rural Development: A System Approach”

Major objectives

Major aims of the project are:

- 1) To understand the relationship between non-formal and formal, informal modes of education in the rural context.
- 2) To develop a systems model for planning non-formal education which will serve the following purposes:
 - a) It will represent an exhaustive compilation of the planning and operational functions required of non-formal education facilitator and co-ordinator.
 - b) It will offer planning sequence of events that will enable systematic planning and predictability about the effectiveness of non-formal education programme.

- c) It will provide necessary guidelines for planning, producing and evaluating learning materials and programmes for specified audience as per their requirements.
 - d) It will also provide guidelines for gathering, analysing, storing information needed for making planning decisions.
- 3) To develop a battery of evaluation tools for evaluation of non-formal education programme.
 - 4) To develop a model non-formal education centre.
 - 5) To study teaching and learning approaches which could be optimally effective for conducting non-formal education and developing instructional methodologies for non-formal education.

Initiating the project

1) Selection of village

Process of selection of a village for the proposed project involved a series of meetings of faculty members followed by an extensive planned contact programme under the leadership of Dr. G.B. Shah, Professor and Head, Department of Education, South Gujarat University, Surat, who is also Honorary Director of the project. Dr. K.V. Sheth, Co-investigator co-ordinated this contact programme. Under this programme the Principal Investigator along with the faculty members contacted many community leaders and voluntary agencies and visited quite a few villages suggested by different people. Suggestion for selection of the village Takarma came from quite a few people which was further strengthened by a meeting with Shri Jagjivanram (Das Kaka), Director, Sumul Dairy, Surat. Still, to take a final decision meeting with people of Takarma was essential. Secondly, we did not want to enter Takarma as foreigners. We wanted to enter Takarma as if we were *returning* to Takarma not as if we were *reaching* Takarma. Hence public relations programme was initiated and Dr. Sheth sent a large number of letters to community leaders of different castes and sections saying that we wanted to meet them with a purpose to initiate few activities in the village wherein we would like to work *with* them. This was followed by a series of meetings with village people mostly in informal sittings. Director of the project along with the project team participated in these meetings. By this time one of our Research Fellows Miss Ansuya Sheth had joined us. These meetings gave us a feeling that there is organizational potential available in this village. Though there are small interest groups but there is possibility of bringing them together to work for the development of the village as such.

Furthermore the level of awakening in this village is low. The village, geographically, is situated away from town or city and, really represents village setting and provides adequate scope for experimentation. These observations also supported selection of Takarma for the purpose of our project.

Experiences gathered in the meetings cited above were discussed at length in the meeting of our faculty members and final decision to select Takarma for our NFE project was taken. After this, a general meeting of the people of Takarma was organised under the Chairmanship of Professor A.R. Desai, Vice-Chancellor of the South Gujarat University, who takes sincere interest in community based projects, on 2nd October, 1978 which was attended by almost all people of Takarma and the project was inaugurated.

Progress of the project

(1) Village survey

This phase included two steps: (i) collection of demographic information about the village; and (ii) door to door survey. To complete the first step two survey blanks were prepared. (i) demographic data blank, which was filled by 'Talati-cum-Secretary' of Gram Panchayat, and (ii) village needs assessment questionnaire which was filled by village leaders (i.e. Sarpanch, etc.) and community leaders. It would not be out of place to give an overview, in brief, of the results of the survey mentioned above. Takarma is about 30 kms. away from Surat. Its population is 903 which is distributed over 142 families. These 142 families include 3 Muslim, 55 Halpati, 6 Harijan, 15 Rajput, 2 Brahmin, 1 Bania, 3 Desai and 55 Patel families. Halpaties are landless labour and 98 per cent of them are illiterate. The village has a milk co-operative. There is no industry in the village. There are only three skilled workers viz. one tailor, one wireman and one mechanic of tractors in the village. Agriculture is the major occupation of the village population. A few people are also engaged in diamond cutting industry and yarn industry based at Surat. There is one primary school in the village and a secondary school outside the village at about a distance of 1 km. Students from about 16 villages come to this secondary school. Primary Health Centre is in Arthan village which is at a distance of 2 kms. from Takarma. There is no drinking water facility in the village. Condition of streets and sanitary conditions of the village are very poor. As has already been stated that the people of the village are interested in the development of the village. They would be interested in participation in the programmes directly related to the immediate problems of the village such as drinking water, village sanitation, health and hygiene, improved agriculture, training in diamond cutting, education, and programmes related to economic development of the village. To supplement the data regarding village needs assessment, interviews with community leaders are being conducted. These interviews have dual purpose (i) gathering more information, and (ii) creating an awakening among the people that they should know their problems and their potential to encounter the same. This will help in developing programmes with the help of villagers because our philosophy is to work with the village people instead of working for them.

(2) Door to door survey

It has been an intensive family survey. Family

survey blank was prepared and administered to each family. Students from the secondary school were also involved in conducting door to door survey. Research staff visited each and every family individually and spent some time with each family for completing the blank and getting acquainted with each family. Survey has been completed and the data are at processing stage.

(3) Family health survey

Family health survey blank has been developed by the project staff in consultation with medical experts. For conducting this survey a few medical practitioners were contacted and two of them agreed to offer their services voluntarily for conducting this survey.

(4) Literacy survey

Research tools for conducting survey to assess political, economic and social literacy in the village are being prepared.

(5) NFE centre

One NFE Center has already been established in the halpati community. Two more will be established very shortly.

(6) Programmes to be initiated

Firstly, the nature of the programmes to be introduced will depend on the analysis of data collected for identification of village needs and from door to door survey. Secondly, programmes as such will not be supplied by the project staff but will be identified and developed with the help of village people. Continuous dialogue with village people with major objective of increasing participation among village people would be used as base for developing programmes. On the basis of our limited experience with the people of Takarma it could be said that the programmes may be related to setting up 'Dialogue Group' (for men and women) introducing 'News-paper without Paper', initiating structured consciousness raising programme, introducing literacy, health education, improved agriculture, rural family welfare programmes. These programmes in future may emerge into the form of special programmes like Human Physiology, Good Habits for health, Health rules for children. Mother and child protection, Planned Parenthood, Religions in India, Indian Culture, Road Safety, Training in organisation, world beyond earth, Saving and Investment, Language learning, Health and Nutrition, Learning to construct a Latrine, Diseases Transmitted by Insects, First Aid, Vaccination, Leadership Training, Building a New Future for Takarma, we work together for the progress of Takarma and so on. Besides this, programmes aimed at special skills will also be initiated which may include Diamond Cutting, Spot Welding, Identifying Electric Circuit faults, Your Driving Habits, Cycle Repairing, Improved Farm Tools, etc.

(7) Development of systems model

Tentative flowchart designs of the model proposed to be developed have already been designed. Now it will be tried, first, in simulated situation and then in the field.

(8) Development of instructional materials

Instructional materials will be developed by the project staff as per needs of the programmes from time to time. Use of Audio-visual aids will be encouraged. Radiovision programmes will, if needed, be developed and used for education, as well as for conducting consciousness raising groups by establishing 'Radiovision Groups'. Task analysis and trait-treatment analysis will be done for taking decisions with regard to type of instructional materials to be developed.

(9) Problems

The main academic problem at the moment is of developing communication pedagogy for establishing effective communication system between the project staff and the people of Takarma. Besides this, it would not be legitimate on my part to discuss problems of participation, response and initiative on the part of village people as problems because they are to be solved with the help of this project. But I would certainly like to invite the attention of N.C.E.R.T. authorities towards its financial aspects. The project has been sanctioned for pilot study. The project is not laboratory based. It is community based and has to be piloted in field. Besides this the nature of the concept of NFE is such that in strict sense variables cannot be controlled and parameters can not be strictly specified for the total period of the

project. The project is concerned with helping a community to help themselves for their development as a group and also as individuals. Here, development includes all the dimensions viz. economic, social, cultural, political, educational, technical, etc. It makes it doubly difficult to define the range of programmes to be introduced and specifying the same in the beginning. As the project marches ahead and the programmes develop the financial requirements changes. Besides this, one of the aims of the project is to develop a systems model which could be used for planning NFE programmes for different target groups. This again demands development of a range of research tools. In fine, the project includes development of programmes, research tools, instructional materials and simultaneously study of development of the community under the project. Looking into this situation one can realise that two junior research fellows with very limited funds are not sufficient for conducting such a project. This project is a developmental cum research project to be conducted in real world situations, hence it should have been provided adequate staff and adequate financial assistance. Thus the main problem is of manpower and finance. If the limit of expenditure on this project could be raised from Rs. 20,000/- to Rs 50,000/- for the pilot phase it would facilitate us to conduct the project more effectively and produce systems model which has been proposed to be prepared. □

Farm Education for Rural Development

(Continued from page 497)

sufficiently high, and the agricultural instruction starts straightaway at entry into the College.

The undergraduate programmes in agriculture are more or less uniform. The instruction starts with basic and then applied subjects with or without any specialisation, extending over a period of four years. It is obvious that relationship between what a student has been taught and the knowledge and training needed in agricultural production would be meaningful only when the student has been involved in personal field production activities carrying sufficient academic credit.

All agricultural institutions whether they teach crop or livestock production should have field class facilities in selected centres. It should be thinking with hands and not getting lost with blackboards and class notes. The class room should serve as an adjunct to field study. It is a methodology wherein teaching is built around practical situations whether

it be in respect of crop or animal raising. The institution provides inputs and substantial part of the profit made would go to the student for the work he puts in.

At least the first two years of the four-year course should be work and production oriented in different aspects of agriculture. This practical exercise would be accompanied by courses on the management of major crops and livestock and close study of crop and animal agriculture around the production centre, through visits and work association. The grading would be on the basis of students' field performance and their attitude towards farming and service to rural people.

Through this production training the student gets an integrated training in agricultural production relevant to needs of rural people. The success of such an integrated programme is directly linked to the committed participation of the teachers and administrators of the agricultural educational institutions.

[Courtesy : The Hindu]

Seminar on universities facing the future

A two-day seminar on 'Universities Facing the Future' was organised in New Delhi under the joint auspices of the University of Delhi, the Jawaharlal Nehru University and the Sri Aurobindo Centre. The seminar was inaugurated by the Union Education Minister, Dr. Karan Singh.

The objective of the seminar was to bring together experts of different disciplines with a view to understanding the problem in a meaningful way. The main theme of the seminar was divided into four topics: (1) Re-casting educational priorities in science and technology; (2) Re-casting educational priorities in Humanities; (3) Re-casting priorities in social sciences; and (4) Re-casting priorities in management and techniques of the universities to

the impoverished people from various kinds of socio-economic exploitations and psychological constraints and making their quality of life richer. He emphasised that more attention should be paid to course content rather than structure of education. The content of courses should be made more rich aesthetically and spiritually to meet the evolutionary needs and aspirations of the learners.

Dr. D.S. Kothari, former Chairman of the University Grants Commission, said that our educational system did not enable the learner to acquire self-confidence in himself and faith in the future of the country. Our educational content of courses must be in harmony with our living dynamic cultural heritage.

Dr. Sarup Singh, former Vice-

that had been assigned to them and to build up leadership. Dr. Rao said that the teachers of an agricultural university were embodiment of total agricultural development. He urged the teachers to examine the quality of research programme, operational efficiency and total commitment to public service. He also advised the teachers to develop centres of excellence in APAU and also to plan and execute innovative programme for the benefit of the community.

Explaining the role of the teacher in the present day context, Dr. T.M. Vittal Rao, Head of Agricultural Chemistry and Soil Science Department of the university said that there was a crisis of education and this needed to be squarely met by the teachers. He asked the teachers to face the grave challenge and take up the opportunity to shape the students into a social asset. He advised the teachers to provide the best in them for the benefit of the taught and called upon them for optimum utilisation of the limited resources and existing facilities to provide education to those who had not had an opportunity for formal education in colleges and universities.

Role of varsities in adult education stressed

The NSS Unit of the Patna University organised a two-day seminar to discuss the role of higher educational institutions in successful implementation of adult education programme. Inaugurating the seminar Dr K.N. Prasad, Vice-Chancellor of the university said that the energy of the university students should be tapped for imparting education to the illiterate. He emphasised the need for practical education to farmers and rural folk through radio, television and other mass media. He added that the success of the programme depended on the revolutionary zeal of workers and the institutions associated with it.

It was also observed at the seminar that universities and colleges could act as motivators and extend their cooperation in the

meet the present and foreseeable needs of the future.

Inaugurating the seminar, Dr. Karan Singh stressed the need to have a holistic approach to the problem. He said that the present fluid situation in the world was partly the result of our inability to achieve a balanced development between the scientific and technological breakthroughs of the 20th century and the growth of human consciousness. Referring to university education, the Minister said that there was need for inbuilt flexibility in the system so that it should be more responsive to meet the present and foreseeable environmental and evolutionary needs of the individual and society. He also urged the need for giving a top priority to non-formal and adult education programmes for emancipating

Chancellor of Delhi University, Dr. R.C. Mehrotra, Vice-Chancellor of Delhi University, Dr. S.K. Mitra, Director, NCERT, Prof. M.V. Mathur, Director, National Institute of Educational Planning and Administration, were among those who spoke at the seminar.

Special role of agricultural faculty

Speaking at the Teachers' Day celebrations of the Andhra Pradesh Agricultural University, Dr N.G.P. Rao, Professor & Head of National Research Centre on Sorghum stressed the need to build up and strengthen effective relationship between the teachers and the taught for mutual benefit. He called upon the teachers to dedicate themselves to the cause

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preparation of reading materials for adult learners. Persons associated with universities and colleges could utilise their off-hours in educating the illiterate adults of their respective areas.

The programme officers of NSS of different colleges, university teachers, representatives of various voluntary organisations and administrators attended the seminar. Dr. D.P. Singh, former Vice-Chancellor of Bhagalpur University, presided over the valedictory function.

Need for guidance to students

The Employment Information and Guidance Bureau of the Osmania University organised a seminar-cum-orientation course for teacher liaison officers in Hyderabad recently. Inaugurating the seminar, the Vice-Chancellor, Prof. G. Ram Reddy, emphasised the need to guide the students in reading and the preparation for competitive examinations.

Mr B.N. Waghray, Director of Employment and Training, who presided, stressed that the activities of the Bureau should be made known to all students of colleges and the liaison officers attending the seminar should be able to do this. He suggested that the students should be guided in facing interviews with the employers.

The various topics discussed at the seminar were concerned with educational and vocational guidance and about 65 lecturers representing the various colleges attended the seminar. Justice K. Madhava Reddy delivered the valedictory address.

Seminar on role of language

A seminar on role of languages in a developing society was organised at the Central Institute of Hindi at Hyderabad recently. Inaugurating the seminar, Dr. Moturi Satyanarayana, an eminent Hindi scholar, said that language was no longer a preserve of the elitist society but had different roles to play to fulfil the needs of a modern society. He

said that all languages of India had roles to play in building good society.

Dr. G. Ram Reddy, Vice-Chancellor of Osmania University, pointed out that politics had been mainly responsible for the language controversy in the South because Hindi had been accepted by all as a link language before independence. He was however optimistic that the present antagonism against Hindi would die down its natural death as it was perpetuated by a small number of disgruntled politicians. Nobody would deny the necessity of having a common link language and all state languages could not become link language at a time.

The Union Education Minister, Dr. Karan Singh, delivered the valedictory address. He called for efforts to see that Hindi was voluntarily accepted by those speaking other languages. All languages were divine gifts and in fact it reflected the beauty and greatness of Indian culture which would assimilate all languages, including English and highlight the essential unity in this diversity.

ISM seminar on corrosion in mines

The Indian School of Mines proposes to organise a two-day seminar on Corrosion in Mines during December this year. The objective of the seminar is to focus attention on the seriousness of the various types of corrosion problems faced by the mining industry and to present the different control measures adopted in minimising the same. The seminar would comprise lectures by eminent corrosion scientists and engineers and would cover the subjects on: (1) Mechanism of corrosion processes; (2) Corrosion of Mining Machinery; (3) Corrosion of wire ropes; (4) Case studies and service failures; and (5) Various protection measures of corrosion.

Other details with regard to the seminar may be obtained from the Coordinator of the seminar.

Character building in education suggested

Mr. Justice V.R. Krishna Iyer of the Supreme Court inaugurated a two-day national seminar on educational change organised by the Akhil Bhartiya Vidyarthi Parishad in New Delhi recently. In his address, Mr. Justice Iyer, called for a rebuilding of the national character. He however regretted that the younger generation had not been brought up on higher values as values had been divorced from education. He appealed to the students and the youth to play their role in national building and to refuse to accept the schemes which do not deal with "cart culture". The education system, he added, should be geared to social transformation.

Shri Kedar Nath Sahni, Chief Executive Councillor of Delhi, who presided over the inaugural function, said that while in the last 32 years there had been lot of discussion on educational change but nothing practical had been done in this regard so far.

Training programme for agricultural management

The Indian Institute of Management, Ahmedabad, conducted a two-week training programme in agriculture management and rural development in Shillong recently under the auspices of the North-Eastern Council. The training which was oriented towards horticulture and plantations, crops, marketing and processing of various perishable produce, laid emphasis on seeking effective solution of the problems of shifting cultivation in the overall agriculture economy of the region.

The State Government officers from the different constituent units of the North-Eastern region dealing with agriculture and allied subjects attended the training programme.

Development of English urged

Addressing the staff and students of Central Institute of

English and Foreign Languages in Hyderabad, the Union Education Minister, Dr. Karan Singh, stressed the imperative need for developing English language on scientific lines as it (English) would remain an integral part of the education system in the country. He regretted that the standard of English teaching had deteriorated and hoped that the Institute could play an important role in this regard.

The Minister pointed out that English had transcended all barriers and had very much become a world heritage. He observed that it was the link language for many more years to come and to give it up would be very much unfortunate.

Medical institute for Kashmir

The Jammu and Kashmir Government proposes to set up a medical institute in the state and would be patterned on lines of the All-India Institute of Medical Sciences. The institute would be the most modern and would be built at an estimated cost of Rs. 21 crores. The government proposes to import most modern medical equipment worth Rs. two crores for various departments like neuro surgery, cancer treatment and cardiovascular treatment. The hospital attached to the institute would have 500 beds for non-paying patients and 100 paying wards. The project is expected to be completed by 1981-82.

Medical Varsity at Andhra

A medical university would soon be established in Andhra Pradesh and the homeopathy, ayurveda and unani systems would be brought under the proposed university. A postgraduate research centre would also be attached to the university.

To start with a 100-bed hospital would be opened on November 1, 1979 at the King Kothi Palace in Hyderabad. The State Government has earmarked a sum of Rs. 25 lakhs for this purpose.

Calcutta scientists evolve new rice varieties

Dr. S.P. Banerjee and Dr. M. Majumdar, scientists in the crop breeding research unit of the Calcutta University have evolved two high yielding rice strains for boro cultivation by crossing Bhutanese variety 'Soka' with the Indian 'Jaya' after three years of extensive lab to land trials. The newly evolved strains are short in duration by 15 to 20 days and have registered 4 to 5 per cent higher yield than that of 'Jaya' and would soon be released to the cultivators.

Three-year medical course in Maharashtra

The Government of Maharashtra has decided to start a three-year short term medical diploma course from the middle of October this year at Dhule, Ratnagiri, Kolhapur, Nanded and Akola. Candidates who have completed their education in rural schools upto 7th standards and have passed higher secondary (i.e. 10+2) examination of the Maharashtra State Board of Secondary and Higher Secondary Education or equivalent examination from the institutions situated in Maharashtra are eligible for admission to this course. Training classes under this scheme will be conducted at the respective district general hospitals.

Islamia institute of technology

The Karnataka Government has permitted the Islamic Mission in India to open the Islamia Institute of Technology from the current academic session. The Institute would have courses in BE Civil and Mechanical Engineering.

PG course in Pharmacology

The Chief Executive Councillor of Delhi has said that a postgraduate course would soon be introduced in Pharmacology College being run by the Delhi Administration. Diploma courses in production technology and a part-time diploma course in phar-

macy for practising pharmacists have also been added to the technical education institution from the current academic session. The CEC said that weightage had been given to rural youth and students belonging to scheduled castes and scheduled tribes in the matter of admission to the technical institutions.

Vocational courses at Andhra proposed

The Andhra Pradesh Government has constituted a committee to examine as to what steps should be taken to make the university courses particularly at the graduate level, vocation-oriented. The Chief-Minister of the State, Dr. M. Channa Reddy said that there was a great demand for technical and vocational courses. The Government had also decided to set up two engineering colleges which would be financed by private bodies. One engineering college would be affiliated to Sri Venkateswara University and the other would be located at Hyderabad and would be sponsored by Chaitanya Educational Society.

Refresher course in English

The regional centre of the Central Institute of English and Foreign Languages organised a two-week refresher course in English at Shillong for the teachers of Assam. Delivering the valedictory address Shri S.C. Goswami, Chairman of Assam Board of Secondary Education said that teachers played a key role in effecting any reform in education. He however regretted that the senior teachers who were progressive in thought showed conservatism in practice. In their teaching they followed the methods through which they were taught instead of adopting modern techniques.

Dr. K.J. Joseph, Reader in the Department of Educational Research of the NEHU said that curriculum and teaching should be relevant to the needs of the students. He emphasised the need for the maximum utilisation of all available resources for education.

Stress on right technology

Delivering the convocation address at the Indian Institute of Technology, Madras, Shri V.G. Rajadhyaksha, Member, Planning Commission said that the country should come out of the ruts of traditional thinking in the choice of technologies bearing in mind the constraints of employment, energy and environment. Most of the country's technology problems such as improving farm implements, transportation system and domestic appliances required sophisticated multidisciplinary inputs. But these could not be solved by sitting in the laboratory.

They required our technologists to go out and stay in the field. He suggested that all IIT students could spend one or two semesters studying and carrying out complete projects in a village or a small town. Government and industry, he said, should play their part in fostering such reorientation.

PAU to launch new research schemes

Under its lab-to-land programme, the Punjab Agricultural University proposes to launch various new schemes. Under this programme, the farm scientists would approach the ordinary farmers to apprise them of the latest agricultural technology and solve their day-to-day problems. Small and marginal farmers who had very limited resources could considerably increase their income if they adopted the new farm technology.

Inaugurating a new programme at the Regional Rice Research Station at Kapurthala, Dr. J.C. Bakshi, Director of Extension Education of the University said that timely transplantation of paddy seedlings and maintaining optimum plant population i.e. 33 plants per sq. metre was a key to successful paddy cultivation. Application of fertilizers, control of weeds through effective chemicals and adoption of plant protection measures against certain diseases could increase the per acre yield of paddy to the extent of 50 per cent.

British Council library at Hyderabad

Under an agreement with the Government of India, the British Council has opened a library in Hyderabad recently. The library will be run under the administrative control of Indian Council of the Cultural Relations but would receive financial and professional support from the British Council. This would be in addition to other centres located at Lucknow, Bangalore, Trivandrum, Poona, Bhopal, Patna and Ranchi.

The library will have an initial stock of 10,000 books and 90 periodicals and will cater mainly for adult readers—especially those in professions, civil servants, students and those engaged in developmental work.

The British Council has already opened four regional libraries at Delhi, Calcutta, Bombay and Madras which provide inter-library loan services as well as professional staff support to all the British libraries.

Need to develop population education

The national conference on planning and development of population education programme in adult education held recently at the Sri Venkateswara University has recommended that steps should be taken to develop population education content in the curriculum for the national adult education programme. It underlined the need for identification and development of human, material and institutional resources in the field of population education and urged that the population education cell of the Directorate of Adult Education should be further strengthened for better coordination. The component of population education should be well integrated in the follow-up programmes of the NAEP. It also stressed the need to prepare a handbook on population education for the benefit of adult education workers at the field level.

HAU starts adult education centre

The Haryana Agricultural University has opened an adult education centre and is being run by the students and teachers of Home Science College of the University. At the centre women are given lessons about hygiene, sanitation, house-keeping, cooking, sewing and stitching. About 68 women have been attending the classes.

Short term course at ISM

Under its Executive Development Programme, the Indian School of Mines, proposes to organise a short-term course on Modern Trends in Ceramic Engineering from November 5 to 10, 1979. The course has been designed to assist and help in training the personnel employed not only in the refractory industry but also engineers/technical personnel engaged in designing, maintenance of equipment in allied industries involving newer ceramic materials and technology by providing them with the theoretical basis for understanding the different unit operations in refractory manufacture.

The course will cover wide ranging topics from raw material to letter production techniques.

Indian scientists to visit cotton research stations abroad

An Indian delegation of cotton scientists would soon be visiting Cotton Research Stations located in Sudan, Peru, U.K. and USA. The delegation would also visit advanced research centres in the American Cotton Belt in the States of California, Phoenix, New Mexico, Texas, Mississippi, Tennessee and would hold discussions with experts of the US Department of Agriculture and scientists engaged in cotton research.

The Indian Council of Agricultural Research has nominated Dr. T.H. Singh, Head of the Department of Plant Breeding of the Punjab Agricultural University as leader of the Indian delegation.

Unesco seminar on education

The Regional Office of Science and Technology for South and Central Asia (ROSTSCA) of the Unesco would organise a regional seminar on education and training of technicians at the Bangladesh University of Engineering and Technology from November 26 to 30, 1979. The seminar will be held in cooperation with the Association for Engineering Education in South and Central Asia.

The seminar will review the national systems, policies and programmes for the education and training of technicians, including prospects and enhancement of the status of technicians, as well as development of regional cooperative programmes. It will also highlight the problems encountered by the member states in the development and improvement of the technicians training programmes, development of specialised training facilities and innovative programmes, in technical teacher training institutions.

The ROSTSCA has been engaged in the promotion and development activities aimed at strengthening the national institutional infrastructure, establishment of regional cooperation in engineering and technological education through the organisation of regional seminars and meetings and specific interest and relevance to the countries of the region, award of travel and study grants to foster inter-institutional and individual links, formation of regional professional societies of engineers and engineering education institutions.

Member States in the region including Afghanistan, Bangladesh, Burma, India, Iran, Mongolia, Nepal, Pakistan and Sri Lanka have been invited to participate in the seminar.

BA special course at Punjabi Varsity

The Punjabi University has started a special BA course of two years' duration for persons intending to join the defence services. The Khalsa College

located at Patiala has been allowed to run the course.

Reservation in BCJ course at Osmania

Under the media personnel category, the Osmania University has reserved two seats in the Bachelor of Communication & Journalism (BCJ) course from the current academic session for the candidates who have put in three years full time paid professional experience in media institutions. Candidates who had already applied for the BCJ course and fulfil the above requirement would also be eligible for admission under this category.

Punjabi Varsity to have regional centre

The Syndicate of the Punjabi University has decided to establish a regional centre of the university at Bhatinda. For this purpose, an eight-member committee under the chairmanship of Dr. Bhagat Singh, D.P.I. (Col-

leges), Punjab, has been constituted. The committee will make recommendations regarding the site of the centre, the estimated expenditure on land and buildings, the subjects to be taught and the staff to be recruited.

Borlaug Award

Dr. M.S. Swaminathan, former Director-General of Indian Council of Agricultural Research, has been awarded the Borlaug Award for 1978 for his outstanding contributions to agricultural research, agricultural education and agricultural development in all its aspects within the country as well as for enhancing the prestige of Indian agricultural science on the international plane.

The Award was instituted by Coromandel Fertilisers in honour of Dr. Norman E. Borlaug's contribution to the wheat revolution and increased production in various parts of the world. It carries a cash award of Rs. 10,000 and a medal.

Asian physical society formed

The first Asian Physical Society has been established and has come into being with effect from the 15th September, 1979. This was a sequel to recommendations made at the Asian Regional Conference on University Physics Education held in May 1977 in Malaysia. In 1978 a draft constitution was circulated by the 'Pro-Tem' Committee to various Physical Societies in Asian countries and the constitution for the Asian Physical Society now adopted has taken into account the reactions received to the draft constitution.

The main objective of the Society is to promote the advancement of Physics and its allied subjects, both in teaching and research, in all the Asian countries. It will also serve as a forum for the discussion of subjects of common interest and for close collaboration between various Physics organisations and Societies in the Asian countries.

The Society comprises institutional members (representing their countries' physics associations), individual members from among

the scientists and corporate members from research laboratories and scientific companies.

The Society proposes to organise workshops, symposia, seminars and conferences on various topics of Physics education in different parts of Asia during the course of the next three years. It also proposes to publish a News Bulletin and a Journal in due course. The first Executive Committee unanimously elected. Prof. Chatar Singh of Malaysia as President and Prof. B. Ramachandra Rao, Vice-Chairman of the University Grants Commission, New Delhi and Prof. M. Barnawi of Indonesia as Vice-Presidents. Dr. S. Radhakrishna, COSTED Scientific Secretary, India, was unanimously elected as the Executive Secretary. Other members of the Executive Committee included the Treasurer and seven other members, one each from Singapore, Thailand, Bangladesh, Pakistan, Hong Kong, Sri Lanka, Philippines and Japan. All of them will hold office for a period of three years.

Conferences, Seminars & Workshops

October-December, 1979

Date	Subject	Venue	Sponsoring Body
Sep-Oct. '79 Sep '79/Jan 80	Seminar on reliability of heavy electrical equipment Diamond Jubilee Celebrations of the Institutions of Engineers	Bangalore New Delhi	Instn of Engineers (India) Institution of Engineers
1 Oct-11 Oct	Workshop of New techniques in neurosciences with special reference to neurophysiology of higher nervous activity	Bangalore	Nat. Inst of Mental Health and Neurosciences
2 Oct-11 Oct	Management of R & D Systems	Hyderabad	Admin. Staff College
2 Oct-13 Oct	Course on advanced computer systems	Hyderabad	Admin Staff College
5 Oct 1979	Seminar on capital formation in Indian engineering industries: the case of multinationals	Delhi	Inst of Economic Growth
8 Oct-10 Oct	Application of colorimetric methods for rapid chemical analysis in cement plants	Ballabgarh	Cement Research Institute
13 Oct-14 Oct	Analysis of synthesis of mechanisms	Bombay	I.I.T.
15 Oct-17 Oct	Hydraulic mining: a seminar	Dhanbad	Indian School of Mines
19 Oct 1979	Workshop on Urban Labour Market: a case study of Delhi	Delhi	Inst of Economic Growth
23 Oct-20 Nov	Hospital administration course	Delhi	Nat Inst of Health and Family Welfare
27 Oct-28 Oct	Industrial hydraulics and hydraulic controls	Bombay	I.I.T.
27 Oct-30 Oct	Seminar on time change and causality in Indian Philosophy	Tirupati	Sri Venkateswara University
29 Oct- 3 Nov	Management of Education systems	Hyderabad	Admin. Staff College
29 Oct-16 Nov	Workshop of family planning	New Delhi	Family Planning Foundation and Nat Inst of Design
October 1979	Seminar on Research Promotion and innovations in evaluation and methodology in physical education	Gwalior	Lakshmibai National College of Physical Education
October 1979	Symposium on Sintering products	Bombay	Dept of Atomic Energy, Bhabha Atomic Research Centre
October 1979	Workshop on scientific and technical manpower for R and D	Hyderabad	Dept of Science and Technology and Institution of Engineers
October 1979	Workshop on Social Dimension of Science and Technology	Shillong	N E. Hill University
31 Oct- 2 Nov	Seminar on the impact of Islam on the West	Aligarh	A.M.U., Dept of Islamic Studies
3 Nov- 4 Nov	Analysis and design of machine foundations	Bombay	I.I.T.
4 Nov- 7 Nov	Ayurvedic Research Seminar	Jamnagar	Gujarat Ayurved Univ., Jamnagar
5 Nov- 7 Nov	Design of concrete structures for storage of water and other aqueous liquids	Ballabgarh	Cement Research Institute
5 Nov-10 Nov	Project Management	Hyderabad	Admin. Staff College
5 Nov-10 Nov	Workshop on passenger safety	Pune	Central Inst of Road Transport
5 Nov-30 Nov	Training course on information storage and retrieval for health and family welfare	Delhi	Nat. Documentation Centre
5 Nov-30 Nov	Unit processes in waste water treatment	Nagpur	National Environmental Engg Research Institute
9 Nov 1979	Workshop on analysis of input use in East U.P. farms	Delhi	Inst of Economic Growth
10 Nov-11 Nov	Organisation and management of health services in rural areas	Bombay	I.I.T.
17 Nov-18 Nov	Symposium on head injury and neuro-otology	Chandigarh	PG Inst of Med Education and Neuro-Otological and Equilibriumetric Society of India
18 Nov-22 Nov	International group discussion/symposium on geology.	Bombay	I.I.T.
18 Nov-23 Nov	2nd National workshop in atomic and molecular physics	Santiniketan	Visva-Bharati
19 Nov-24 Nov	Workshop on corporate image building	Pune	Central Inst of Road Transport
19 Nov-30 Nov	Winter School on Electron paramagnetic resonance	Bombay	I.I.T.
22 Nov-29 Nov	11th Course in materials management	Delhi	Nat Inst of Health and Family Welfare
24 Nov-25 Nov	Switchgear principles and high voltage testing	Bombay	I.I.T.
26 Nov- 1 Dec	Mine safety Management	Dhanbad	Indian School of Mines
30 Nov 1979	Seminar pn exchange rate policies in developing countries	Delhi	Inst of Economic Growth
Nov. 15 (days)	Advances in irrigation systems	Hyderabad	Institution of Engineers
3 Dec- 5 Dec	Corrosion in mines: a seminar	Dhanbad	Indian School of Mines
4 Dec- 8 Dec	4th Asian Cancer conference	Bombay	Tata Memorial Centre and India Cancer Society
4 Dec-15 Dec	Management of human resources	Hyderabad	Admin. Staff College

Date	Subject	Venue	Sponsoring Body
5 Dec- 7 Dec	6th Nat. Conference on I.C. engines and combustion	Bombay	I.I.T.
5 Dec-14 Dec	Workshop on restructuring the syllabus in English	Tirupati	Sri Padmavathi Women's College
10 Dec-15 Dec	Production Management	Ahmedabad	Nat. Productivity Council
13 Dec-14 Dec	National Solar energy convention, 1979	Bombay	Solar Energy Society of India
13 Dec-15 Dec	National seminar on fertiliser marketing and use	New Delhi	Fertiliser Assn of India
13 Dec-15 Dec	23rd Technical convention of I.E.T.E.	Delhi	Inst of Electronic and Telecom Engrs
14 December 79	Seminar on how accurate is the census count? An analysis of the 1951, 1961 and 1971 check.	Delhi	Inst of Economic Growth
18 Dec-20 Dec	Planning for electrical energy	Hyderabad	Admin. Staff College
19 Dec-22 Dec	International Conference on Development and Behaviour of Drosophila	Bombay	Tata Inst for Fundamental Research
22 Dec-25 Dec	32nd annual session of Indian Institute of Chemical Engineers	Bombay	Indian Inst of Chemical Engineers
27 Dec-29 Dec	Technological forecasting	Hyderabad	Admin. Staff College
28 December 79	Workshop on capital intensity and productivity in small scale manufacturing industry	Delhi	Inst of Economic Growth
28 Dec-30 Dec	28th Annual conference of the Anatomical Society of India	Bombay	Anatomical Society of India
Dec.'79(15 days)	Modern power station operation	Hyderabad	Institution of Engineers
December 1979	2nd National Conference on Corrosion and its control	Calcutta	Society for the Advancement of Electro-chemical Sc and Technology

Subject Index

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Agriculture			
Nov. 15 (days)	Advances in irrigation systems	Hyderabad	Institution of Engineers
13 Dec-15 Dec	National Seminar on fertiliser marketing and use	New Delhi	Fertiliser Assn of India
9 November	Workshop on analysis of input use in East U.P. farms	Delhi	Inst of Economic Growth
Computers			
2 Oct-13 Oct	Course on advanced computer systems	Hyderabad	Admin. Staff College
Economics			
30 November	Seminar on exchange rate policies in developing countries	Delhi	Inst of Economic Growth
14 December	Seminar on how accurate is the census count? An analysis of the 1951; 1961 and 1971 check.	Delhi	Inst of Economic Growth
19 October	Workshop on Urban Labour Market: a case study of Delhi	Delhi	Inst of Economic Growth
Education			
29 Oct- 3 Nov	Management of Education systems	Hyderabad	Admin Staff College
October 1979	Seminar on Research promotion and innovations in evaluation and methodology in physical education	Gwalior	Lakshmibai National College of Physical Education
5 Dec-14 Dec	Workshop on restructuring the syllabus in English	Tirupati	Sri Padmavathi Women's College
Engineering-General			
3 Nov- 4 Nov	Analysis and design of machine foundations	Bombay	I.I.T.
13 Oct-14 Nov	Analysis and synthesis of mechanisms	Bombay	I.I.T.
Sep 79-Jan 80	Diamond Jubilee Celebrations of the Institution of Engineers	Delhi	Institution of Engineers
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October 1979	Symposium on sintering products	Bombay	Dept of Atomic Energy and Bhabha Atomic Research Centre
22 Dec-25 Dec	32nd annual session of Indian Institute of Chemical Engineers	Bombay	Indian Inst of Chem. Engineers
Engineering-Electrical and Electronic			
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13 Dec 25 Dec	23rd Technical convention of I.E.T.E.	Delhi	Inst of Electronic and Telecomm, Engineers
Engineering-Power			
Dec'79 (15 days)	Modern power station operation	Hyderabad	Instn of Engineers

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13 Dec-14 Dec 18 Dec-20 Dec 5 Dec- 7 Dec	National solar energy convention, 1979 Planning for electrical energy 6th Nat. Conference on I.C. engines and combustion	Bombay Hyderabad Bombay	Solar Energy Society of India Admin. Staff College I.I.T.
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Mining			
3 Dec- 5 Dec	Corrosion in Mines: a seminar	Dhanbad	Indian School of Mines
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27 Oct-30 Oct	Seminar on time change and causality in Indian Philosophy	Tirupati	Sri Venkateswara University
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Public Health and Family Planning			
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27 Dec-29 Dec	Technological forecasting	Hyderabad	Admin. Staff College
October 1979	Workshop on Scientific and technical manpower for R and D	Hyderabad	Dept of Sc. and Tech. and Institution of Engineers
October 1979	Workshop on Social Dimension of science and technology	Shillong	N.E. Hill University
Transport			
5 Nov-10 Nov	Workshop on passenger safety	Pune	Central Inst of Road Transport
Water Treatment			
5 Nov- 7 Nov	Design of concrete structures for storage of water and other aqueous liquids	Ballabgarh	Cement Research Institute
5 Nov-30 Nov	Unit processes in waste water treatment	Nagpur	National Environmental Engineering Research Institute

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9. Ramachandran Nair, J. Satire in modern Hindi poetry. University of Cochin.

10. Shah, Madhuri Maganlal. Kamleshwar ka katha sahitya. Marathwada University.

11. Shrivastava, Nilam. Ambika Datt Vyas: Jiwan aur sahitya. Kashi Vidyapith.

12. Shrotriya, Badrinarayan Dhularam. Bhakti kaleen Bhakt kaviyon kee soundarya bhavana : Sur tatha Tulsi ke sandarbh mein. Marathwada University.

13. Singh, Vijay Pratap. Chhayavadi kaviyon ke kavya mein rahasyavad. Kashi Vidyapith.

14. Sud, Suman. Hindi aur Gujarati Upanyason mein Gandhi-Vichardhara. University of Delhi.

15. Tripathi, Amritlal. Sufi premakhyanak kavya parampara aur Manjhan krit Madhumalati : Kavyagat vivechan. Kashi Vidyapith.

16. Tripathi, Kamla Prasad. Chhayavadottar kavya mein rashtriya chetana ka swarup. Kashi Vidyapith.

17. Tripathi, Shobnath. Pragativadi samiksha : Manyatayen evam prayog. Kashi Vidyapith.

18. Verma, Manju. Madhyakaleen pramukh sant kaviyon evam Jain dharmi kaviyon ka tulnakmak adhyayan. Kashi Vidyapith.

19. Yadav, Bhagwan Dev. Nirala kavya ka vastu tatwa. Kashi Vidyapith.

Bengali

1. Basu, Jyotsna. Parasuramer Galpa : Manabaisista shilparup-o-bhashariti. University of Calcutta.

2. Dutta, Asa. Banga sahitye sahitya chintar dhara. Visva-Bharati

3. Mukhopadhyay, Tapas Kumar. Kabi Jibanananda Das. University of Calcutta.

4. Panda, Bishnupada. Madhyajugiya Bangla kabya urissar kabider abadan. D.Litt. University of Calcutta.

5. Sen, Bidyutkumar. Unabinsa satabdir Bangla naksha sahitya, 1801-1875. University of Calcutta.

Oriya

1. Mohapatra, Sitaram. Contribution of Christian missionaries to Oriya literature in the 19th century. Utkal University.

Marathi

1. Garge, Vasant Ramchandra. Sant Chokhamela: Ek chikitsak abhyas. Shivaji University.

2. Girdhari, Bhaskar Venkatrao. Mahabharatadhishtit arvachin Marathi sahityacha abhyas. University of Poona.

3. Kamatkar, Gopal Ramachandra. Vishnushastri Chip-lankar yanchya vangamaychaya va karyacha chikitsik abhyas. University of Poona.

4. Nanal, Vidya. Marathi psychological short stories, 1940-1965. Shreemati Nathibai Damodar Thackersey Women's University, Bombay.

5. Veer, Ramachandra Ganapati. Marathi ekankika: Ek abhyas. University of Poona.

Persian

1. Khan, Rahmat Ali. Parsian literature under Adil Shahi Dynasty, 1489 to 1686 A.D. (A.H. 895 to 1097). University of Delhi

2. Margoob, Ghulam Mohammad. Kashmir ka Farsi adab Shahmiri dour mein. University of Kashmir.

Tamil

1. Shanmugam, E. Kotikkalyerrap-p-pattukal of Tanjavur District : A study. University of Madras.

2. Shantha, M.S. A critical study of sivaprakasars literary works. University of Madras.

3. Sivakamasundari, P. Home science in Tamil literature. University of Madras.

Malayalam

1. Kumari Amma, S. Sarala. A comparative study of the influence of Gandhism on Hindi and Malayalam poetry. University of Kerala.

2. Sowdamini Amma, P. A comprehensive and comparative study on Radha depicted in the works of Krishnit poets in Hindi and Malayalam. University of Kerala.

Kannada

1. Siddapa, Hakari Devendrakumar. Gnanapada : Samajika kathana geetegalalli dukhantha nirupane. Karnatak University.

Telugu

1. Hanumantha Rao, Kasturi. Nissenka kammana siva-leela vilasamu : A critical study. Andhra University.

Geography

1. Tripathi, Satchidananda. Urbanization trends in the Orissa coastal plain. Utkal University.

History

1. Bandyopadhyay, Arun Kumar. Agrarian economy of Tamilnadu, 1820-1855. University of Calcutta.

2. Chavan, Kamal K. Maratha murals : Late medieval painting of the Deccan, 1650-1850 A.D. Poona.

3. Lal, Vishvanath Rashtrakut yug : Rajnaitik sanskritik adhyayan (Hindi) Kashi Vidyapith.

4. Mahajan, Shantaram Gajanan. History of the public library movement in Western Maharashtra, 1806-1921. University of Poona.

5. Pandey, Ram Anant. Bharatiya Jansangh : Udbhawa evam vikas (Hindi) Kashi Vidyapith.

6. Prakash Chander. Grameen samaj aur samudaya : Vedic yug se 320 isvi tak (Hindi) Kashi Vidyapith.

7. Singh, Rambahadur. Guptakal mein malwa (Hindi) Kashi Vidyapith.

A list of select articles culled from Periodicals received in AIU library during September, 1979

EDUCATIONAL PHILOSOPHY

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- Partington, Geoffrey. "Relativism, objectivity and moral judgement". *British Journal of Educational Studies* 27(2); June 79: 125-39.

EDUCATIONAL PSYCHOLOGY

- Davis, Robert H. "Behavioural change model with implications for faculty development". *Higher Education* 8(2); Mar 79: 123-40.
- Dobson, Clifford B. "Study inventory responses and 'A' level grades". *Educational Studies* 5(2); June 79: 127-34.
- Egan, Kieran. "Sensitive periods and motivation: Towards an educational theory of motivation". *Oxford Review of Education* 4(2); 1978: 173-83.
- Hounsell, Dai. "Learning to learn: Research and development in student learning". *Higher Education* 8(4); July 79: 453-69.
- Link, Charles R. and Ratledge, Edward C. Student perceptions, I.Q., and achievement." *Journal of Human Resources* 14(1); Winter 79: 98-111.

EDUCATIONAL SOCIOLOGY

- Foley, Douglas E. "Anthropological studies of schooling in developing countries: Some recent findings and trends." *Comparative Education Review* 21(2-3); June-Oct 77: 311-28.
- Lundgren, David C. and Schwab, Mary R. "Impact of college on students: Residential context, relations with parents and peers, and self-esteem." *Youth and Society* 10(3); Mar 79: 227-36.
- Massialas, Byron G. "Education and political development." *Comparative Education Review* 21 (2-3); June-Oct 77: 274-95.
- Suri, Surinder. "System of remedial education for underprivileged classes at university level." *New Frontiers in Education* 9(2); Apr-June 79: 1-33.
- Thomas, T.M. "Emerging social dimensions of education: Experiments in India and U.S.A." *New Frontiers in Education* 9(2); April-June 79: 47-53.

EDUCATIONAL ADMINISTRATION

- Adam, Gyogy. "Democratisation of higher education through admission policies." *Prospects* 9(1); 1970: 54-7.
- Clark, Burton R. "Many pathways of academic co-ordination." *Higher Education* 8(3); May 79: 251-67.
- Gaff, Jerry G. and Justics, David O. "Faculty development yesterday, to-day and tomorrow." *New Directions for Higher Education* (24); 1978: 85-98.
- Hurst, Paul. "Appraisal criteria and the acceptance of innovations." *Educational Studies* 5(2); June 79: 135-50.
- Schechter, William. "Management policy and organisation in higher education." *New Frontiers in Education* 9(2); Apr-June 79: 54-67.
- Thrash, Patricia A. "Accreditation: A perspective." *Journal of Higher Education* (Ohio) 50(2); Mar-Apr 79: 115-20.
- Vaish, L.P. "Inter-university co-ordination board." *University News* 17(16); 15 Aug 79: 429-30.
- Zemsky, Robert "Decentralised planning: To share responsibility." *Educational Record* 59(3); Summer 78: 229-53.

CURRICULUM

- INTERGOVERNMENTAL CONFERENCE on environmental education: Recommendations and guiding principles for the role of environmental education in higher education

institutions. *Higher Education in Europe* 4 (1); Jan-Mar 79: 5-14.

- Moroni, Antonio. "Interdisciplinarity and environmental education." *Prospects* 8(4); 1978: 480-84.
- Tandon, Rajni. "Drama courses: A new pattern for studies in the humanities." *New Frontiers in Education* 9(2); Apr-June 79: 83-7.

TEACHING

- Shamsuddin, "Quality of teaching profession." *Indian Education* 9(5); Aug 79: 32-4.
- Sharma, Motilal. "Developing university advisory teaching service." *University News* 17(15); 1 Aug 79: 404-6.

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- Elton, L.R.B. "Educational technology and the needs of higher education." *British Journal of Educational Technology* 10(1); Jan 79: 40-5.
- Mulay, Vijaya. "Teacher in the sky." *Prospects* 8(4); 1978: 531-4.
- Shaw, M.L.G. and Thomas, L.F. "Extracting an education from a course of instruction." *British Journal of Educational Technology* 10(1); Jan 79: 5-17.

EVALUATION

- Dearden, R.F. "Assessment of learning." *British Journal of Educational Studies* 27(2); June 79: 111-24.
- Harris, John. "A new day for assessment in higher education." *Educational Record* 59(3); Summer 78: 268-82.
- Perlberg, Arye. "Evaluation of instruction in higher education: Some critical issues." *Higher Education* 8(2); Mar 79: 141-57.
- Srivastava, H.S. "Examination and employment." *University News* 17(17); 1 Sep 79: 451-5.
- Venkat Rami Reddy, A. "Two year follow up study on internal assessment." *Journal of Higher Education* (Delhi) 4(1); Monsoon 47-56.

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- Cherrington, B.E. "Cost analysis in academic decision making." *Educational Record* 60(2); Spring 79: 185-96.
- Froomking, Joseph. "Middle-income students and the cost of education." *Educational Record* 59(3); Summer 78: 254-67.
- Sandberger, Johann-Ulrich and Lind, Georg. "Outcomes of university education: Some empirical findings on aims and expectations in the Federal Republic of Germany." *Higher Education* 8(2); Mar 79: 179-203.

ADULT EDUCATION

- George, Judith. "Tutorials at home: A growing trend." *Teaching at a Distance* (14); Spring 79: 19-23.
- Shah, L.R. "Role of the university in National Adult Education Programme." *Indian Journal of Adult Education* 40(7); July 79: 31-5.

COMPARATIVE EDUCATION AND COUNTRY STUDIES

- Revier, Dominique. "Heterogeneity of the European universities: Common problems and differences." *Higher Education in Europe* 4(2); Apr-June 79: 9-13.
- Rudra, K.K. and Rastogi, S.P. "Regional distribution of selected technical educational facilities in India." *Journal of Higher Education* (Delhi) 4(1); Monsoon 78: 23-31

CLASSIFIED ADVERTISEMENTS

PANJAB UNIVERSITY CHANDIGARH

Advertisement No. 18/79

Applications are invited for the post of Director Professor (Rs. 1500-60-1800-100-2000-125/2-2500) at Vishveshvaranand Vishva Bandhu Institute of Sanskrit and Indological Studies, Panjab University, Hoshiarpur, so as to reach the Registrar, Panjab University, Chandigarh, alongwith postal orders for Rs. 10/- by 22.10.1979. Fourteen days extra time is permissible to the persons who have to submit their applications from abroad.

Qualifications Essential

- (i) A first or high second class Masters' degree in Sanskrit of an Indian University or an equivalent qualification of a foreign University in the subject with bright academic record;
- (ii) Either a Research degree of doctoral standard or published Research work of high standard in journals of repute in the field of Vedic Language and Literature.
- (iii) About 10 years experience of teaching post-graduate classes and/or research in Vedic Language and Literature at a University or a recognised Research Institute and sufficient experience of guiding research at Doctoral level and supervising research projects;

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge in the discipline.

Desirable

- (i) Good knowledge of Nirukta Paninian Grammar (Vyakarna).
- (ii) Working knowledge of Avestan, German and French Languages.

Candidates who do not possess a doctoral degree are required to submit 10 typed/cyclostyled copies of brief resume of their published work.

Persons already in service should route their applications through proper channel. Incomplete forms and those received after the due date will not be entertained. Serving employees may, however, send their applications on the prescribed proforma, direct to the University. They may route another copy through their Departments. They will be allowed to present themselves for interview only on the production of a 'No Objection Certificate' from their employers. Canvassing in any form will disqualify the candidate.

Application forms can be obtained from the Cashier, Panjab University, Chandigarh, personally on payment of Rs. 2/- or by making a written request to the Finance and Development Officer, Panjab University, Chandigarh, accompanied by self-addressed stamped envelope of 23 x 10 cms. and a postal order for Rs. 2/- drawn in favour of the Registrar, Panjab University, Chandigarh.

MARATHWADA AGRICULTURAL UNIVERSITY PARBHANI (MAHARASHTRA STATE)

Advertisement No. MAU. 2/79

Applications in the prescribed form are invited on or before 12-10-1979 for the following posts in the payscales mentioned against these posts.

Before applying please read carefully

- (1) The candidates who have already applied in response to the Advertisement No. MAU. 2/77 and MAU 1/79 and were fulfilling the terms and conditions and requirements of the post at that time need not apply again.
- (2) The candidates who were not fulfilling the requirements for the posts in advertisement No.

MAU.2/77 and MAU. 1/79 at that time may apply afresh if they have subsequently acquired the required qualifications.

- (3) If a candidate has previously applied for a particular post and now intends to apply for another post by virtue of higher qualifications will be required to apply afresh.
- (4) Inservice candidates may also apply afresh to avoid the risk of late receipt of application by the University in response to previous advertisements.

Sr. No.	Name of the post	Pay-scales of the post
1	2	3
1.	Dean, Faculty of Agriculture	Rs. 1500-60-1800-100-2000-125/2-2500.
2.	Associate Dean & Principal (Home Science)	-do-
3.	Professor of Agril. Economics	-do-
4.	Professor of Anatomy (Vety)	-do-
5.	Professor of Food Science and Tech. (Tech.)	-do-
6.	Professor of Home Science, (Food & Nutrition/Textile & Clothing/Child Development & Family Relationship)	-do-
7.	Associate Professor of Surgery (Vety)	Rs. 1200-50-1300-60-1900.
8.	Associate Professor of Food Engg. (Tech.)	-do-
9.	Associate Prpfessor of Food Microbiology (Tech.)	-do-
10.	Associate Professor of Cereal Tech. (Tech.)	-do-
11.	Associate Professor of Clothing and Textile (Home Science)	-do-
12.	University Engineer	Rs. 1000-50-1500.
13.	Assistant Prof. of Surgery (Vety)	Rs. 700-40-1100-50-1600.
14.	Assistant Prof. of Parasitology (Vety)	-do-
15.	Assistant Prof. of Medicine (Vety)	-do-
16.	Assistant Prof. of Physiology (Vety)	-do-
17.	Assistant Prof. of Anatomy (Vety)	-do-
18.	Assistant Prof. of Animal Nutrition (Vety)	-do-
19.	Assistant Prof. of Microbiology (Vety)	-do-
20.	Assistant Prof. of Home Science, (Textile & Clothing/Home Management/Child Development & Family Relationship/Food Nutrition/Extension Education)	-do-
21.	Assistant Prof. of Technology, (Food Technology/Food Engineering/Cereal Technology/Food Microbiology)	-do-
22.	Assistant Prof. of Entomology	-do-
23.	Mechanical Engineer	-do-
24.	Comptroller	Rs. 680-40-1000-EB-50-1500
25.	Deputy Engineer	Rs. 600-30-750-EB-40-1150.
26.	Assistant Comptroller/Assistant Accounts Officer	-do-
27.	Demonstrator (Home Science)	Rs. 500-20-750-25-900.
28.	Farm Superintendent (Cow & Sheep Unit (Vety)	-do-
29.	Agricultural Officer	-do-
30.	Music Teacher (H.S.)	-do-
31.	Meteorological Observer	-do-
32.	Research Assistant (Technology)	-do-
33.	Senior Live Stock Supervisor	-do-
34.	Junior Engineer	Rs. 395-15-500-20-700-25-900 (Higher start to Rs. 425/- for three years Diploma holders. Rs. 500/- for Engineering Graduates).

1	2	3
35.	Stenographer	Rs 395-15-500-20-700-Extn-20-800
36.	Technical Assistant (Library)	Rs 365-15-500-20-600-Extn-20-760
37.	Steno-Typist	Rs 335-15-500-20-580-Extn-20-680
38.	Live Stock Supervisor	Rs 290-10-390-15-465-Extn-15-540
39.	Sub-Overseer	— do —
40.	Senior Mechanic	— do —
41.	Machineman	— do —
42.	Block Maker	— do —
43.	Compounder (Medicine)	— do — (Highr start
		Rs 330/- with Diploma Pharmacy)
44.	Agricultural Assistant	Rs 260-10-390-15-420-Extn-15-495 (Higher start of Rs. 310/- for Agril. Graduate).
45.	Laboratory Assistant (Home Sci.)	Rs 260-10-390-15-420-Ext-15-495
46.	Junior Clerk/Section Assistant	— do —
47.	Tracer	— do —
48.	Library Assistant	— do —
49.	Reprographic Assistant	— do —
50.	Boiler Assistant	— do —
51.	Compositor	— do —
52.	Montesary Teacher (Home Science)	Rs 200-10-290-15-350

- Age: (1) For the post at Sr. No. 1 and 2 not more than (40) years.
(2) For the post at Sr. No. 3 to 26 not more than (30) years.
(3) For the post at Sr. No. 27 to 52 minimum 18 years, maximum 25 years.

Maximum age limit will be relaxable for all posts by 5 years for candidates belonging to SC/ST/NT/DNT/OBC.

The age limit shall not apply to persons already in service of Central/State Government/this University or any other University/Institute recognised by this University.

Application forms and details regarding qualification etc. for the post at Sr. No. 1 to 26 can be obtained from the Comptroller, Marathwada Agril. University, Parbhani at the cost of Rs. 2/- in the form of Crossed Indian Postal Orders in the name of the Comptroller, Marathwada Agril. University, Parbhani and for these posts applications in the prescribed forms complete in all respect together with Crossed IPO of Rs. 8/- in the name of the Comptroller, MAU, Parbhani as registration fees should reach to the Registrar, MAU, Parbhani latest by 5.00 p.m. on 12-10-79.

Application forms and details regarding qualifications etc. for the post at Sr. No. 27 to 52 can be obtained from the Comptroller, MAU, Parbhani free of cost only for unemployed candidates and should be submitted without registration fees to the Registrar MAU, Parbhani latest by 5.00 p.m. on 12-10-79. Other candidates willing to apply for these posts at Sr. No. (27 to 52) will have to obtain prescribed application forms at the cost of Rs. 2/- in the form of Crossed Indian Postal Orderst in the name of the Comptroller/MAU, Parbhani and should submit without registration fees to the Registrar, MAU, Parbhani latest by 5.00 p.m. on 12.10.79.

Incomplete applications in any form and those received after prescribed time and date will not be considered and no correspondence thereon will be entertained.

Reservation of post for SC/ST/NT/

DNT/OBC etc. is as per Maharashtra State Government rules. Backlog of reserve seats will also be considered.

Request for forms must specify the name and Sr. No. of the post accompanied by self-addressed envelope at least of the size of 23 cm x 10 cm with 55 paise stamp adhered to it. Separate applications shall have to be made for separate posts.

If considered necessary by the University the candidate shall have to appear for personal interview in the University's office at Parbhani at candidate's own cost.

In the event of large number of applications received in response to this advertisement, to avoid inconvenience to all concerned, at the discretion of the Vice-Chancellor, limited number of candidates may only be invited for interview even though others not invited for interview might be satisfying the prescribed minimum qualifications.

Candidates already in service of Central/State Government or any other organisation and those in the service of this University should necessarily apply through proper channel forwarding an advance copy to the undersigned. The advance copy should reach latest by 5.00 p.m. on 12-10-1979. The applications to be received through proper channel should reach latest by 5.00 p.m. on 26.10.1979.

The fact that the posts are advertised does not mean that necessarily all the posts will be filled in.

S. T. Kachwe
REGISTRAR

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY

Humayunnagar, Hyderabad-500028
Andhra Pradesh

Notification

Applications are invited for the post of Lecturer in the Constituent Colleges of J.N.T. University, Hyderabad in the following faculties:

1. Electrical Engineering;
2. Mechanical Engineering;
3. Electronics and Communication

Engineering.

1. (a) Scale of Pay
Rs. 700-40-1100-50-1600 with D.A. H.R.A., C.C.A. etc. as per State Government Rules;

(b) Age limit

Not more than 30 years as on 1.10.79. the age limit can be relaxed in case of inservice candidates of J.N.T.U.

For S.C., S.T. and B.C. candidates the age limit is relaxable by 5 Yrs.

(c) Qualifications

A first class Masters Degree in the concerned subject with consistently good academic record.

(d) Specialisations required

1. Electrical Engg.

Instrumentation or real time control of Power Systems or power systems.

2. Mechanical-Engg.

Machine Design, Foundry Instrumentation.

3. Electronics and Comm Engg.

Micro-waves, Communication systems, Advance Electronics, Computer hardware, Computer Engg., Radar and Micro-wave Engg. Solid State Devices and Circutes, Active network Synthesis, Digital Electronics,

Candidates interested may apply on a plain paper to the Registrar, J.N.T. University, Humayunnagar, Hyderabad-500 028, enclosing a Demand Draft for Rs. 15/- (Rupees 3/- in case of S.C. and S.T. candidates) in favour of Registrar, J.N.T. University, Hyderabad, payable at any of the scheduled banks at Hyderabad, along with the application form so as to reach him on or before 22-10-1979, furnishing the following information:

Post applied for; Name in full (Block Letters); Postal Address to which communications should be sent; Date of birth and Age; whether belonging to S.C./S.T./B.C.. Educational qualifications, Experience (teaching and non-teaching), any other information, signature of candidates.

Note: Persons who are employed should submit their applications through their employer. Persons claiming to belong to S.C./S.T./B.C. should produce the Community Certificate from the appropriate authorities. Late applications will not be entertained.

REGISTRAR

HARYANA AGRICULTURAL UNIVERSITY, HISSAR

Corrigendum

Post No. 30 (Assistant Professor English) of Advertisement No. 5/79 published on 1.9.1979. If suitable candidates for Assistant Professor are not available, the post will be filled up by Teaching Associates in the pay scale of Rs 600-30-750-40-950 with the following qualifications:

- (i) Second class B.A. with English.
- (ii) Second class M.A. in English.

Eligible candidates can apply latest by 12.10.79. Those who applied earlier need not apply again.

REGISTRAR

**OSMANIA UNIVERSITY
HYDERABAD 500 007 (AP)**

Advertisement No. 14/1979

Applications, in the prescribed form, together with the registration fee of Rs. 5/- are invited for the following posts in the University service, so as to reach the undersigned on or before 8.10.1979.

**Qualifications
Librarian**

Rs. 1100-50-1300-60-1600 (unrevised).

- (i) Good academic record with first or high second class Master's degree in a subject other than Library Science with a Doctorate degree or equivalent published work of high standard and preferably with experience of guiding research and with knowledge/experience of Library Services and Management.
- (ii) At least ten years experience of teaching Post-graduate classes and research or research in an independent capacity in an organisation of higher learning and research or in a responsible post in a Library for advanced students and research workers.

**Lecturers in Library Science
Rs. 700-40-1100-50-1600.**

Consistently good academic record with first or high second class M.Lib. Science with 55% (B+) marks in aggregate with at least a second class B.A./B.Sc./B. Com. degree of an Indian University or an examination recognised as equivalent thereto from a recognised University.

OR

Consistently good academic record with first or high second class Masters' Degree with 55% (B+) marks in aggregate with a second class B. Lib. Science degree or one year Post-graduate Diploma in Library Science from an Indian University or an examination recognised as equivalent thereto from a recognised University.

Note: Candidates with experience in a responsible capacity in a recognised library or experience in teaching the subject of Library Science at a University of an affiliated college will be given preference.

Age

Librarian—Not above (50) years
Lecturers in Library Science—Not above (35) years

(i) Age limit does not apply to the employees of this University.

(ii) Age relaxation can be considered in deserving cases.

14%, 4% and 25% reservations are made for Scheduled Castes, Scheduled Tribes and Backward Classes respectively only in case of Lecturers.

Application forms can be had from the Director, Department of Publications and University Press, Osmania

University, Hyderabad-500007, Andhra Pradesh on payment of Rs. 4.50 in person or by money order or by a postal order UNCROSSED made payable to the Director, University Press and by sending a self-addressed envelope (11½ x 2½ cms.) duly stamped for ordinary or registered post.

A latest passport size photograph should be affixed on the application form.

**B. Ramachandra Reddy
REGISTRAR**

**THE UNIVERSITY OF
BURDWAN**

**RAJBATI : BURDWAN
WEST BENGAL**

**Advertisement No. 5/79-80
Dated, 10th September 1979**

Applications in the prescribed form are invited for the following posts in the approved scales of pay (viz. Reader—Rs. 1200-50-1300-60-1900/- and Lecturer—Rs. 700-40-1100-50-1600/-) with allowances and other benefits according to University Rules.

A. Department of Geography

(i) Reader—One post (lien bound likely to be permanent)

(ii) Lecturer—Four posts (three permanent and one lien bound likely to be permanent)

B. Department of Law

(i) Lecturer—Two posts

C. Department of Economics

(i) Lecturer—One post.

Minimum Qualifications

(a) A Doctor's Degree or published research work of an equally high standard; and

(b) For A and C: Consistently good academic record with first or high Second Class (B in the seven point scale) Master's Degree in the relevant subjects or an equivalent degree of a foreign University.

For B: Consistently good academic record with first or high Second Class (B in the seven point scale) Masters' Degree in Law or an equivalent degree of a foreign University.

Desirable Qualifications: Specialisation or Proficiency

For A (i) Social Geography

For A (ii): For the three permanent posts of Lecturer

(a) One post with specialisation in Economic Geography. Special knowledge of Agriculture/Industrial Geography will be considered an additional qualification;

(b) One post of Lecturer in Geomorphology with specialisation in any one of the following fields;

Cartography / Meteorology /
Climatology / Geology. The

teacher will be required also to take survey classes;

- (c) One post with specialisation in Pedology.

**For the temporary post of
Lecturer**

One post with proficiency in any branch of Geography. Must have a special knowledge of Statistical Methods and Quantitative Techniques for taking classes on Quantitative Geography.

For B (i)

- (a) One post with knowledge and experience in teaching any of the subjects noted below:

Administrative Law, Public Administrations, Legal Remedies, Criminology, Interpretation of Statutes and Principles of Legislation.

- (b) One post with fair knowledge in teaching Rules of Court or any of the above subjects.

For C (i)

Specialisation—Agricultural Economics. Candidates whose field of specialisation is Statistics—Econometrics may also apply.

This is in partial modification of the specialisation indicated in Advertisement No. 3/79-80 dated, the 7th August, 1979 regarding the post of Lecturer in Economics.

The University Council may, on the recommendation of the appropriate Selection Committee, waive any of the requirements in view of the candidate's specialised knowledge in the subject. The choice of the Committee may not necessarily be confined to those who apply formally.

For application form and other information apply to the Registrar with a self-addressed stamped (0.40p.) envelope (9" x 4").

Last date for submission of applications with the requisite fee of Rs. 5/- is October 31, 1979.

**A.K. Chaudhuri
REGISTRAR**

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**PANJAB UNIVERSITY
CHANDIGARH**

Corrigendum to Advertisement No. 17/79

"Advertisement No. 17/79 for the posts of Lecturers in the Directorate of Correspondence Courses, Panjab University, Chandigarh, 15% posts of Lecturers will be reserved for the members of Scheduled Castes and 2% for the members of Scheduled Tribes, but these will be filled up by others if no suitable Scheduled Castes/Scheduled Tribes applicant is available."

**H.L. Sharma
Finance and Development Officer**

— — —

PANJAB UNIVERSITY CHANDIGARH

Advertisement No. 20/79

Applications are invited for the following posts so as to reach the Registrar, Panjab University, Chandigarh, alongwith postal order for Rs. 10/- by 25.10.1979. Fourteen days extra time is permissible to the persons who have to submit their applications from abroad.

POSTS, SCALE OF PAY AND QUALIFICATIONS

1. Department of Chemistry
Professors-2 (Rs. 1500-60-1800-100-2000-125/2-2500)

(Professor of Inorganic Chemistry-1.
Professor of Chemical Education-1)

QUALIFICATIONS

For both the posts

Essential

- a) A First or High second class Master's degree of an Indian University or an equivalent qualification of a foreign University in the subject with bright academic record ;
- b) Either a research degree of Doctoral standard or published Research work of high standard in journals of repute.
- c) About 10 years experience of teaching post-graduate classes/ research ; and
- d) Experience of guiding research at Doctoral level.

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge in the discipline concerned.

Desirable

Professor of Chemical Education

Outstanding meritorious contribution in any field of Chemistry. Persons having some experience of the Development of Chemical Education and teaching aids will be preferred. Competence to guide research and evidence of being engaged in making innovation in teaching methods and production of standard teaching materials. Special interest in writing books or developing experiments for under-graduate students.

2. Department of Chemical Engineering & Technology
Lecturers-2 (Rs. 700-40-1100-50-1600)
(Electrical Engineering-1 (Permanent),
Mechanical Engineering-1 (Temporary).

QUALIFICATIONS

For both the posts

Essential

First class Bachelor's degree in Electrical Engineering/Mechanical Engineering respectively followed by a Master's degree.

Desirable

- (i) Two years, industrial/research/teaching experience in an Engineering institution or a University.

- (ii) Doctoral degree or published work of equal standard.

Candidates for the posts of Profes-

sors who do not possess a doctoral degree are required to submit 10 typed/cyclostyled copies of brief resume of their published work. 15% posts of Lecturers will be reserved for the members of the Scheduled Castes and 2% for the members of Scheduled Tribes, but these will be filled up by others if no suitable Scheduled Castes/Scheduled Tribes applicant is available.

Persons already in service should route their applications through proper channel. Incomplete forms and those received after the due date will not be entertained. Serving employees may, however, send their applications on the prescribed proforma direct to the University. They may route another copy through their Departments. They will be allowed to present themselves for interview only on the production of a 'No Objection Certificate' from their employers. Canvassing in any form will disqualify the candidate.

Application forms can be obtained from the Cashier, Panjab University, Chandigarh, personally on payment of Rs. 2/- or by making a written request to the Finance & Development Officer, Panjab University, Chandigarh, accompanied by self-addressed stamped envelope of 23 x 10 cms and a postal order for Rs. 2/- drawn in favour of the Registrar, Panjab University, Chandigarh.

PUNJABI UNIVERSITY PATIALA

Advertisement No. 51/ESTT/PRO/79
Applications are invited for the

following post :

REGISTRAR'S OFFICE

1. FINANCE OFFICER (Rs. 1100-50-1600)

The candidate should be M.A. or B.A. with SAS and possess atleast ten years experience of dealing Finance & Establishment in a supervisory/administrative capacity in a University/Institution of Higher Education or in Government offices.

GENERAL :

Higher start within the grade admissible depending upon the ability and experience of the candidate. House rent and Dearness Allowance, Provident Fund and Medical facilities according to the University rules.

Applications, complete in all respect on the prescribed form, accompanied by a crossed postal order worth Rs 5/- (Rs 2/- for candidates belonging to Scheduled Castes/Tribes and Backward Classes) drawn in favour of the Registrar, Punjabi University, Patiala, should reach the University by 10-10-79. The forms can be had from the Superintendent (Establishment) by sending a self-addressed envelope of the size of 23 x 10 cms. stamped with 30 paise postage.

Persons already in service should apply through proper channel. Government servants who are not in a position to submit their applications through proper channel before the due date should submit an advance copy before the due date and regular applications through proper channel by 12-10-79.

REGISTRAR

MAHARASHTRA ASSOCIATION FOR THE CULTIVATION OF SCIENCE

LAW COLLEGE ROAD : PUNE 411 004

Applications are invited for the following temporary posts under DST Scheme on Palm Monograph:

Name of the Post	No. of Posts	Essential Qualifications
1. Research Associate (Rs. 1000/- p.m. fixed)	1	M.Sc. with Palaeobotany or higher degree with research experience and publications.
2. -do-	1	M.Sc. or higher degree in Botany with plants taxonomy, anatomy and research experience and publications.
3. Research Fellow (Rs. 600/- p.m. fixed)	2	M.Sc. (Botany) with experience of anatomy, palynology, taxonomy of monocots and fossil angiosperms.
4. Laboratory Assistant (Rs. 400/- p.m. fixed)	2	B.Sc. (Bot. Chem/Microbiology) familiar with microtechniques, free hand and camera lucida drawings and photography.
5. -do-	1	Proficiency in typewriting and stenography.
6. Field Collector (Rs. 300/- p.m. fixed)	1	S.S.C. or undergraduate with good ability in recognising plants, field and herbarium work.

For Posts at 1 to 5 retired persons are also eligible. Qualifications relaxable in specially suitable cases. Further information of job requirement can be had from the undersigned. No. T.A. admissible for attending interview. Applications stating name, qualifications, experience, age, publications etc. should reach the undersigned within 15 days.

C.S. Nakate
REGISTRAR

University News

FORTNIGHTLY CHRONICLE OF HIGHER EDUCATION & RESEARCH OCTOBER 15, 1979

- **Institutions & Industries**
- **Examination Reforms**
- **Population Education**
- **Autonomous Colleges**
- **Solar Energy in Agriculture and Industry**
- **Three-language Formula**
- **Workshop on Question Bank**

JAWAHARLAL NEHRU UNIVERSITY

NEW DELHI-110067
Advt. No. Aca. 111/21/79

Applications are invited for the following posts:

Centre of Post Graduate Studies, Imphal

1. Professor/Senior Fellow in Economics

Essential Qualifications

- Consistently good academic record with at least a high second class Master's degree in Economics or an equivalent qualification from an Indian/foreign University;
- A doctor's degree or published work of an equally high standard; and
- About ten years' experience of teaching and/or research.

Area of Specialisation

Monetary Theory/Agricultural Economics/History of Economic Thought.

School of International Studies

Centre for Studies in Diplomacy,
International Law and Economics

2. Associate Professor/Fellow in International Law (Temporary Short-term vacancy)

Essential Qualifications

- Consistently good academic record with at least a high 2nd Class Master's degree in a relevant discipline or its equivalent qualification from an Indian/foreign University.
- A doctor's degree or published work of an equally high standard in International Law in any of the following subjects:
 - Law of International Organisation, including the International Court of Justice;
 - Law of the Sea.
- About five years' experience of teaching and/or research.

Desirable

Published work of high standard in the fields mentioned above.

3. Research Assistant (Temporary for one year)

Essential Qualifications

Master's degree in Law or M.Phil in International Law.

Desirable

Teaching and/or research experience for one or two years.

Scales of Pay

- Professor/Senior Fellow
Rs. 1500-60-1800-100-2000-125/2-2500.
- Associate Professor/Fellow
Rs. 1200-50-1300-60-1900.
- Research Assistant—Rs. 550-20-650-25-750.

Plus usual allowances as admissible to the members of the staff in the Central Universities.

Relaxation in any of the qualifications may be made (a) in favour of persons of eminence or of high academic/professional distinction, and (b) in exceptional cases where adequately qualified

persons are not available but are otherwise found suitable for the respective positions. It will also be open to the University to consider the names of suitable candidates who may not have applied.

The selected candidates will be expected to participate in the teaching and research programmes in the concerned disciplines in other Schools of the University as well as in the programmes offered in their own Centres of Studies.

Normally appointment of Fellows is made on contract basis for a period ranging from one to three years.

Benefits of C.P. Fund-cum-Gratuity/G.P. Fund-cum-Pension-cum-Gratuity are available as per University Rules.

Persons already in employment should route their application through proper channel.

For Research Assistant

Age limit 40 years.

16½% and 5% posts are reserved for Scheduled Castes and Scheduled Tribes candidates respectively.

Second Class (mail) fare (both ways) will be paid to candidates invited to appear for interview from outstation by the shortest route subject to the production of rail receipt.

Applications, separate for each post, on the prescribed form, obtainable free of cost from the University by sending a self-addressed and stamped envelope (affixing Postage Stamps worth Rs. 2.85) of 23 cm×10 cm size to the Deputy Registrar (Academic), Jawaharlal Nehru University, New Mehrauli Road, New Delhi-110067, should reach him latest by 19th November, 1979.

Candidates from abroad, applying for faculty positions, may apply on plain paper, (but their applications should reach the University by the last date) furnishing all the relevant informations such as their names, date and place of birth; marital status; nationality; state or domicile; postal and permanent addresses; father's name and address; academic and professional attainments; full details of (a) publications, and (b) research projects undertaken; language(s) known; details of visits to foreign countries; and the names and addresses of at least two persons well acquainted with the candidates professional work who should also be requested by the candidate to forward to the Deputy Registrar (Academic) confidential report concerning the candidate.

SAURASHTRA UNIVERSITY RAJKOT-360005

Applications in the prescribed forms are invited for the posts of (1) Professor of Gujarati; (2) Professor of Economics with Specialisation in Business Management, Financial Management, Marketing Management or Personnel Management and/or allied subjects; (3) Professor of Sociology—The incumbent is required to develop Rural Sociology

in Saurashtra; (4) Professor of Chemistry—preferably organic. Those specialised in Inorganic Chemistry may also apply; (5) Professor of Law—preferably specialisation in Mercantile Law; (6) Reader in Economics with specialisation in Business Management, Financial Management, Marketing Management or Personnel Management and/or allied subjects; (7) Reader in Law; (8) Reader in History; (9) Reader in Commerce with specialisation in Accountancy, Business Management, Personnel Management, Marketing Management or any other specialisation field in Commerce and Management; (10) Director of Physical Education.

Post Nos. 1 to 9 are for the various departments of this University and Post No. 10 is for University office.

Pay Scales

- Professor: Rs. 1500-60-1800-100-2000-125/2-2500.
- Reader: Rs. 1200-50-1300-60-1600-assessment-60-1900.
- Director of Physical Education: Rs. 1100-50-1300-EB-60-1600.

Reservation for Scheduled Castes/Scheduled Tribes, Nomadic Tribes/Denotified Tribes and Social and Educational Backward Classes will be 5% for the post Nos. 1 to 9 and 10% for the post No. 10. Age ordinarily not exceeding 55 years for the post Nos. 1 to 9 and 45 years for the Post No. 10. The posts are permanent and carry benefit of contributory provident fund as per University rules. Dearness Allowance and House Rent Allowance will be paid as per University rules. Higher initial salary in the scale may be considered in case of exceptionally qualified and experienced persons. Qualifications and experience may be relaxed in special cases. Candidates in employment must submit their applications through their present employer. Those knowing Gujarati and/or Hindi will be preferred.

Application forms alongwith detailed requirements of qualifications and experience required for above posts will be available from the Registrar, Saurashtra University, University Campus, Kalawad Road, Rajkot-360 005 on sending a self-addressed envelope of the size 23×11 cms. with postage stamps worth Rs. 1-20 for the post Nos. 1 to 9 and 0-40 paise for the post No. 10.

Applications in seven copies for the Post Nos. 1 to 9 and one copy for the post No. 10 accompanied by Indian Postal Order for Rs. 5/- for the Post Nos. 1 to 9 and Re. 1/- for the post No. 10 crossed in favour of the Registrar, Saurashtra University, Rajkot should reach this office on or before 12-11-1979.

If no candidate is found suitable for the post of Professor of Law then the post may be filled in by a Reader in the scale of Rs. 1200-50-1300-60-1600-assessment-60-1900.

B. F. Shah
I/C. REGISTRAR

UNIVERSITY NEWS

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Opinions expressed in the articles and reviews are individual and do not necessarily reflect the policies of the Association

Hony. Editor : ANJNI KUMAR

Institutions & Industries

N.V.R.L.N. Rao*

Introduction

U = [GET]

The URGE in man is maximum GAIN with minimum EFFORT in shortest possible TIME. This natural urge in man makes him unnatural (artificial) in development of social relationships. Institutions help in the formative years of one's career to prepare for the satisfaction of basic urge. Industries are places of production of goods in abundance for human needs and promote commerce between individuals and nations and play important role in satisfying the basic urge in man.

Industrial revolution brought in importance to technical education at the cost of general education. After a century and half technical education is in utter confusion. The valley between institutions and industries began to grow wide and deep as the technology progressed. Proper understanding, co-operation and co-ordination between institutions and industries fostered for the mutual benefit and prosperity of mankind are the need of hour.

Technical institutions

The [functions of technical institutions have become more difficult in the midst of unprecedented knowledge and growing specialization. The fantastic growth of knowledge is degenerating into scholarship that is incommunicable. Technological Institutions are growing to be more academic and diploma oriented instructions have become order of the day. The emphasis on diploma has resulted into complicated situations in the institutions. The training of mind, development of attitudes, enduring habits and above all character and personality are sacrificed. Ideally higher technological institutions should introduce, induce and inspire in addition to imparting basic knowledge and professional etiquette among its pupils. The output from these institutions are expected to be engineers, designers and researchers in their chosen field of activity while learning as per their needs. But the expectation of industries to have readymade stuff for immediate use for institutions is neither possible nor desirable. Allegations like uselessness of products from institutions or antiquity of industries are unwarranted and uncharitable.

It is a difficult task to draft a curricula to suit varying demands of industries. Further the period to be spent in technological institutions necessarily has to be minimum. In order to play proper role institutions should have freedom in selecting its members, faculty and pupils. They (faculty and pupils) must have necessary intelligence, interest and industry. It is due to lack of this criteria educational institutions are facing crisis.

(Continued on page 527)

*Professor of Civil Engg. Osmania University.

Examination Reforms in Kashmir University

G. H. Gurku*

In the years since independence there has been tremendous expansion of educational facilities in the State for which it deserves to be congratulated. The State has also the unique distinction of having made all education tuition free and has consistently adopted a policy of increasing the facilities for education at all stages particularly in rural areas.

Education is a double-edged tool and can be powerful instrument of social progress only if it has the proper character, coverage and quality. Therefore we need to give emphasis not only imparting of knowledge but also on stimulating and cultivating habits of self study, on the teaching of Skills, especially productive skills, on the development of rational scientific outlook and problem solving ability; on promoting creativity and self-reliance, on development of a sense of social awareness and social responsibility and on cultivation of basic human values, a secular outlook and a democratic attitude including tolerance and ability to work with others in a spirit of mutual respect and adjustment.

It is considered necessary that education should serve the dual purpose of raising the level of intellectual development of the individual and of making him a more competent agent of social change and national development. The new society will have to be based on science which is the most powerful instrument of modernization.

For the last few years, there has been much discussion about the objectives, contents and methodology of education at all levels. There is general feeling that our educational programme, right from the School to the higher level is lacking in depth and purpose. There is great rush for admission to colleges and universities but the graduates get no job for long periods. On the other hand our educational institutions seem to ignore social and economic problems of our society.

It is more painful in a poor country like ours, when it costs several thousand rupees per year, on the average, to educate a single student. On the one hand there is a considerable dearth of persons with necessary and important skills, and on the other hand there is over production of certain categories of skills which are not so much in demand. There is too much of an emphasis on more imparting of knowledge and too little attention to the teaching of essential skills and inculcation of values. The methods of teaching are largely traditional, do not use modern technology or powerful media like the film, radio and T.V. The service of these media's should be fully utilised. It will prove very useful for teaching. The best results in Television can be obtained only if there is special unit for the purpose in Education Department and the universities.

There is an increasing general dissatisfaction with the present system, among teachers and growing unrest and unemployment among students

The people of the State are proud of having Sheikh Mohammad Abdullah as Chief Minister, who, is also holding the post of Pro-Chancellor of the two universities, Kashmir and Jammu. Since he took over as Chief Minister of the State, the Government led by him introduced many far reaching reforms in the field of Education.

A far reaching reform at both undergraduate and post-graduate has been considered the order of the day. The University Grants Commission has issued a framework of policy and the Kashmir University Committee (Tyabji Committee) thoroughly examined our programmes of study and made suggestions to improve them. It is believed that the suggestion of both the U.G.C. and the said Committee will go a long way in making education more relevant to our needs.

Examinations are of vital importance in our programme of study and they are a link between educational institutions and outside the world. On the one hand the admission to different educational institutions are governed by the results of examinations and on the other hand to a large extent employment depends on them. It has been felt that the present system of examinations will not allow the necessary broadening of the educational purpose. We need now to create such educational structure as will meet the growing and more changing needs of the people in the years ahead.

Now, in order to make the system of examinations more purposeful and to develop the intellectual level of the student, the University of Kashmir this year introduced reforms in the University Examinations and started Semester pattern of education at University level. It is believed that the system among other things will help the student to improve mode of learning. It will also help him in understanding the relevance of education in the best form both in the classroom and in the field. This new system will enable the student to face the challenges of the present day society in the meaningful manner. The new pattern of examinations is sure to enable the student to be better fitted to play good and positive role in the development of economy of the State. But the success of the new pattern of examinations is not possible without dedication and active involvement of the teachers community. Both the college and the university teachers shall have to play significant role for the success of the new pattern. The teachers who are the maker of the nation should also share the responsibilities and realise their duties. If this can be done, over the next few years, we have no doubt, that the high native talent of the people will be available in the State.

*University of Kashmir.

Strategy for Population Education

B.V. Venkata Rao*

There has been considerable public interest in regard to the problem of growing population in the country in the past 25-30 years and the focus has been only on limitation of numbers through popularisation of various birth control measures. It is now being realised that the strategy of containing numbers in relation to resources can be more meaningful through a process of education on the implications of the problem than mere propaganda on family planning.

What can be the content of population education in school and college curricula? Soil, water, natural vegetation and animals are the basic resources for human existence. The purpose of agriculture has been the use of these resources in order to produce food, fibre, fodder and timber required for man and his animals. Increased pressure of population will naturally lead to accelerated use of these resources, leading to a situation of exhaustion or rundown. This can be illustrated with instances of over-exploitation of soil or land for the production of food and other agricultural commodities to meet the demands of increasing population.

The two approaches to increased agricultural production in any country are extension of area under cultivation and or intensification of cropping in areas already being cultivated. The former results in inroads into area under natural vegetation like pastures and forests while the latter involves more and more chemicalisation of agriculture with its attendant series of adverse effects.

In recent years, the land hunger and its politicalisation have led to indiscriminate extension of cultivation of areas under permanent vegetative cover.

Intensive agriculture with its components such as high yielding crop variety, water, fertilizers and plant protection chemicals, has its own limitations. The prosperity associated with large scale irrigation will cease to be long lasting due to a variety of causes like waterlogging, salinisation, alkalinisation and other factors. Overdrawing on natural resources whether it be, soil or water or plants or minerals or oil is bound to lead us to a situation of distress sooner than we realise.

Livestock agriculture is very exacting on land resources. It requires 3-4 times the area to feed man on animal products as against grain crops. The accent should be one of keeping animal products in our diet to a bare minimum.

The two ways of incorporating the element of population education in educational curricula are (i) identifying appropriate places in the various subjects currently taught in the programme in schools and colleges including aspects that relate to population dynamics and (ii) the development of new course on population in relation to natural resources, one at the pre-matriculate level and the other at the college level and teach the same as a basic subject, so that all students emerging out of the high schools and col-

leges are exposed to the significance of population regulation in relation to natural resources.

The Association of Indian Universities has developed a syllabus for population studies at the undergraduate level. The main aspects of the syllabus are (i) to inculcate an awareness of population dynamics including structure and distribution, (ii) factors and processes affecting population change, (iii) interrelationship of population and national development including economic, sociological, health and environmental aspects, and (iv) social policy formulation in relation to population growth. The method by which we incorporate this important aspect of knowledge into teaching at the school and college levels needs thorough attention.

Alongside of education on population problem, implementation of positive action-oriented programmes to cry a halt to the alarming growth in population, needs no emphasis. (Courtesy: *The Hindu*)

Institutions & Industries

(Continued from page 525)

Industries

Industries, no doubt, have their own problems. They being commercial establishments do not wish to lose time in training personnel. But they have to have certain facilities to train personnel to satisfy their specific needs. It is also to be realised that learning is through three channels namely imitation, studies and experience. Opportunities for the first and last channel can be provided only by industries concerned. Big industries need to maintain their own training institutions to meet the requirement of personnel at various levels. The workers form base of any industry. They can be trained only on shop floor.

Many industries cannot afford to have their own research and development cells. Research and developmental activities cannot be planned in advance and they need absolute freedom to think and live which busy industries cannot afford. Therefore referring of problems by industry to institutions is of mutual advantage. This enables institutions to keep abreast with latest problems of practical importance. Patronising institutions by industries is highly desirable.

Conclusions.

In satisfying the basic urge in man the institutions and industries have a great role to play. Most important being cooperation, co-ordination through mutual understanding between the two for the prosperity of mankind. Industries need patronise institutions by referring their problems to institutions. Allegations like uselessness of products from institutions and antiquity of industries are unwarranted and uncharitable. Higher technological institutions need freedom in selecting their members having necessary intelligence, interest and industry. □

* University of Agricultural Sciences, Bangalore.

Autonomous Colleges Experiment

D. S. Devanesan*

Tamil Nadu has been complimented for achieving a creditable first, namely, the implementation of the Kothari Commission's recommendation made over a decade ago that 50 selected colleges may be granted autonomy. Nine colleges affiliated to the Madras and Madurai Kamaraj Universities have been "liberated" so far.

The granting of autonomy to these colleges is significant as an attempt to break away from the old London model which still dominates Indian higher education even after three decades of Independence.

What has been the impact of this bold step taken by the solitary State of Tamil Nadu on the system of higher education? Have the autonomous colleges been able to project an image of their changed selves under the conditions of freedom granted to them by their parent universities which is encouraging to other institutions wanting to acquire a similar status?

The impression one gains is that "autonomy" has been hedged around with certain limitations and constraints which have dampened to some extent the early enthusiasm of the colleges eager to achieve it.

What are some of the 'constraints' about which one hears some murmurings whether they are fully justified or not?

An autonomous college has to abide by all the eligibility rules for admissions laid down by the parent university with all its socio-economic and political overtones and undertones. This is contrary to what was suggested by the Kohari Commission which included the right of an autonomous college to frame its own admission rules in its recommendations.

It is also stated that the parent universities have unwillingly made it largely impossible to breakaway from the rigid system of grouping of subjects leading to a particular degree. In other words, however much a college would like to frame courses and syllabuses after their own mind, situation and available intellectual resources, they hesitate to break away from the narrow limits already laid down for them by the existing ordinances.

As long as these ordinances apply without necessary amendments a dynamic head of a department or a brilliant professor who would like to design his own courses and cluster of subjects is likely to feel some sense of frustration. Such rigid rules make difficult the possibility of any kind of a serious interdisciplinary and interdepartmental approach in the framing of the new syllabuses under autonomy. The mere revamping of courses and syllabuses within the existing framework which keeps the arts

and the sciences apart and maintains walls of separation between departments is unlikely to produce the desired change to a more innovative and flexible system

Another constraint mentioned is that of finance. Some of the autonomous colleges feel they are being asked to make bricks without straw! It seems clear that autonomous colleges cannot expect much additional financial help. The UGC has tried to help by assuring assistance to the tune of rupees one lakh to those autonomous colleges which submit satisfactory schemes. But the State Government is unable to do much. The financial constraint, aggravated by stern warnings against any increase in fees, is particularly hard on good private colleges which have to struggle constantly to generate more funds to maintain and surpass the standards they have established.

The feeling one gets is that the new autonomous colleges would like the universities, the State Government and the UGC to rethink their policies and attitudes to "autonomy" if there is a genuine desire that they should be pace-making agents rather than institutions with a temporary face-lift which is unlikely to last or prove attractive, academically speaking, in the long run.

In spite of these constraints the autonomous colleges seem to be involved in a brave attempt to make the best out of a not entirely satisfactory situation. How are they faring and what problems are they facing as they struggle to interpret and implement the limited autonomy given to them?

Obviously they have to be prepared to face some initial resistance from various quarters. The strength and the degree of resistance seems to depend on the extent of the communication and the quality of the enthusiasm generated when the college was in the thick of its institutional planning. Much of the response depends on whether staff and students were actively involved in the thinking and decision-making prior to the gaining of autonomy.

Some of the student fears relate to the methods of evaluation. Since the power to examine is now vested in the teachers of each autonomous college some students are apprehensive as to how just and objective they will be. This may not be quite fair to the majority of teachers but the few instances of favouritism that have come to light are enough to spark off student anxieties. They are also fearful that diversified and experimental courses may make it difficult for them to gain admission to post-graduate courses, to migrate to other universities or to get proper employment if their degrees are not of the traditional type.

The teachers have their own fears about their ability to cope with the increased load of work, whether they are adequately trained to try out new syllabuses, new teaching methods and new style examinations in which they have to be capable of facing a student who feels he has not been marked properly. And it is not only worry about satisfying individual students but a fear that malcontents will use five willing services of politically-motivated student lea-

(Contd. on page 529)

*Director, Institute for Development Education, Madras.

Delinking Degrees from Jobs

M. V. Sridhara*

From the point of view of teachers and universities, the necessity for delinking degrees from jobs is fairly clear. They have had enough of the futility of teaching thousands of crib hunters, tuition goers and certificate seekers. They do not want their potential to become atrophied and sterile. Their concern is knowledge—research and teaching—and its relation to life in general (not necessarily in the sense of production of tangible goods). They would like their students to become devoted to the cause of learning as an end in itself. They expect to make their wards sound in understanding and judgment, shapely in thought and emotion and effective as citizens and leaders in an egalitarian democracy. The recipients of university education are sought to be made into decision making individuals and not mere efficient and informed instruments in the hands of some moneyed or politically powerful clever and coarse self seekers. The universities would like their alumni to become uncompromising at the sight of evil even amidst adversity and temptations. The existing state of affairs and the practices of several university men must not make us cynical and discouraged; they must not blind us to these high ideals and every effort has to be made to keep them in the focus of our vision and endeavour.

Applications of knowledge, technology, increasing and diversifying production, creation of and fitting people into jobs, assessing and paying for jobs, fixing scales of emoluments, devising promotional policies are necessarily in the nature of an incidental fall out from the work of educational institutions and universities. The latter are not their sole determinant causes. Universities cannot be held responsible for the various ills and misfortunes of society such as unemployment and unemployability, lack of human and material resources, concentration of wealth and population etc., etc. These problems have to be solved by the State, industry, agriculture and generally the people through their individual and corporate efforts. Universities can and will help them only from a distance and that too unobtrusively. Putting it briefly, the universities create an awareness of the needs and the necessary potentialities for accomplishing various developmental tasks and attempt to form and reform the outlook of men.

Universities do not have at their focus jobs and performing and designing of jobs. Instead, they have at their focus, the intellectual, moral and political values embodied in science, literature, philosophy and history. So, it is preposterous to expect these institutions of learning to work at the level of particularities and train young men in the performance of this

or that job. So, the employers (and in general, the people) will be mistaken in expecting that the universities would directly enable people to undertake the tasks of production or administration. Students with certain basic mental and physical capacities will have to be trained over a period of time and sent on to produce and to administer.

As the situation has developed and as the likelihood of developing, most of the jobs—in banks, revenue offices, sales agencies, warehousing, public relation etc., etc—do not require the knowledge one is supposed to acquire during the course of a university degree. Students who are intent upon going for any one of such jobs do not therefore evince interest in the studies prescribed in college. So, their presence in classrooms is a waste and an unnecessary burden. It hampers seriousness and undermines devotion. These features are highly infectious and have spread like epidemics destroying the purpose of universities. In view of this, selective admissions have the potentiality to make the functioning of universities effective and worth while. In the context of selective admissions into university courses, the delinking of degrees from jobs is a must.

When degrees are delinked from jobs, young men and women who are intent upon qualifying themselves for various jobs, do not turn to universities. But, they will seek opportunities in polytechnics and such other training institutes concerned with particularities and performance of specific jobs. A new type of pressure on such institutions will develop and this in turn will result in diversification and experimentation in technical and administrative training. This will not only make people employable but jobs also will be done satisfactorily and without waste.

Complementarily, universities become comparatively unburdened and are thus enabled to deal with motivated students and teachers. Their work tends to become wholesome and worthwhile. Their research and teaching will flourish better. Synoptic and critical studies can be undertaken. For want of devotion to these matters only, the universities are suffering from neglect and public disesteem. Their philosophic role requires to be resurrected. □

Autonomous Colleges

(Continued from page 528)

ders keen to bring the college union into such academic matters.

All this suggests that autonomous colleges are passing through their birth pangs. But they may render a great service to the cause of higher education by striving patiently to make the experiment a success in Tamil Nadu. Perhaps the nine autonomous colleges should begin meeting together to share their experiences and to make the State Government, the UGC and general public aware of the problems involved in their pioneering situation. □

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Systems Approach for Science Study

K. M. Chandrashekar

Perhaps one of the deplorable features of twentieth century culture is its increasingly schizoid nature—intellectuals trained in the humanities can no longer comprehend what the scientists are talking about and scientists do not seem particularly concerned about anything so long as their laboratories keep going and the research grants keep flowing in. This is because the scientist's universe of discourse no longer overlaps that of the poet or historian: what to a poet, or canny politician, is Mother India, is merely a bit of what was Gondwanaland to a geologist; and even Mother Earth, to an astronomer, is merely a planet in the vicinity of a G. type dwarf star. The absence of common universe of discourse dooms all efforts at bridging the gap between the "two cultures" to failure.

If we sense that the schism must not be allowed to grow, one of the first steps would be to introduce compulsory courses in the sciences at the undergraduates level. These courses, which could be in various disciplines—Physics, Biology, Mathematics, etc—must be common to all college entrants (who would be free to choose a course out of the available set), whether they intend to specialize in the sciences or not. Only in this way can we build up a common, basic vocabulary. This requires that the course be sufficiently rigorous to hold the attention of would-be scientists and, at the same time, not be so taxing as to repel would-be scholars in the humanities. This is certainly a demanding task, but perhaps one that a creative instructor will enjoy,

Prof. Gerald Holton introduced one such course in Physics at Harvard University in the early seventies. Taught to first and second year students, the course covered such topics as Galilean and Newtonian Mechanics, the Conservation of Mass and Energy, Origins of the Atomic Theory, and Relativity Theory. But the feature of the course was a term-paper on a set theme. "The impact of the Newtonian Synthesis on X in the eighteenth century," where X stood for philosophy, theology or political science or literature—whichever was of greatest interest to the student. Prof. Holton reports that "students call this essay a high point of the course", and that they come to realise that cohesive links do exist between two fields of scholarship. Some of the topics taken up by the students have interesting looking titles—for example: "The conception of order in English Poetry before and after Newton", "The effect of science on legal theory", "Use of mechanics in arguments from design as a proof of God's existence in eighteenth century theological discussions." Prof. Holton stresses the fact this excursion into realms traditionally not part

of Physics did not detract from the soundness of the scientific content of the course. And further, he adds that such a course depends "primarily on the attitude of the instructor and only secondarily on the quality of the student."

It may be noted that this innovation in the teaching of science represents, in essence, a "Systems" approach, for the systems approach attempts to see facts in wholes rather than in bits and pieces; it stresses relationships rather than information *per se*. And it may be that only this kind of perspective can lend coherence to the apparent chaos of twentieth century culture.

But the billion-dollar question, of course, is this: "Can such a course be successfully run in India?" The answer, as Prof. Holton points out, lies with the instructor. Reading material and bibliographies will have to be compiled. And the instructor will have to seek assistance from faculty members outside his field of specialization. *En passant*, it may be noted that there are very interesting correspondences between scientific thought and ancient Indian modes of thought, as Fritjof Capra explains in his brilliant book, "The Tao of Physics". These are inter-relations which deserve to be more deeply explored and widely known.

The result of such a course could be deeply rewarding both to the instructor and the students: a Weltanschauung that is richly interconnected. And this in turn could make for tolerance and a less chauvinistic view of life.

[Courtesy: The Hindu]

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Need for development of science and technology

Scientific and technological knowledge has become so vast and complicated that it is no longer possible for politicians or the general public to understand fully the implications of scientific discoveries and technological innovations without the help of scientists and technologists themselves. And it is also impossible for those who hold political power to exploit science and technology for political purposes unless the scientists and technologists are willing to go along with them. Plato talked of philosopher-kings. The world of today needs philosopher-scientists who possess the insight and imagination to understand the impact of science and technology on society- environment and the fate of the human race so that its blind advance is guided by social and world responsibility. The assertion of this social responsibility by scientists might well determine whether the world is moving towards a new age in which mankind will realize the dreams of prosperity, happiness and peace, or whether it will hurtle towards the destruction of civilization, the environment and the human race itself.

The danger of war and of the annihilation of civilization through the use of nuclear weapons is a well-worn theme. But people are becoming increasingly insensitive to this danger. There is no passion and piety in the demand for disarmament and the abolition of nuclear weapons. There is no voice as that of Jawaharlal Nehru being raised constantly and vibrantly against the danger of war, and warning as he did at the Belgrade Conference of Non-aligned Nations that unless this main problem is solved "no other problem remains: they are submerged in the terrible disaster of war". It is time disarmament, especially nuclear disarmament, got the highest priority in international diplomacy.

One remarkable thing is that while the nuclear powers go on piling up and sophisticating their nuclear arsenal, they are pressurising and preventing others, who desperately need nuclear energy for peaceful purposes, from acquiring and developing this vital source of energy. They talk about nuclear-free zones in areas where there are actually no nuclear weapons. In any case

what is the rationale for a nuclear-free zone in a region which is exposed to atomic radiation from tests conducted without inhibition in the neighbourhood, which could be traversed by testing inter-continental missiles, and which is on the fringe of a vast ocean where nuclear-powered ships and submarines of the super-powers contend for global influence? One depressing fact of international relations today is that the majority of nations and of the population of the world has become ineffectual in regard to disarmament and discussions on disarmament. It would appear that if a nation does not enter the nuclear club, it would have no effective say on this vital question on which hangs the survival of mankind.

India, as you know, is committed to the development of atomic energy for peaceful purposes. The other day I happened to read a speech that Jawaharlal Nehru made in Bombay on June 26, 1946 in which he referred to the use of the atom bomb on Japan by the United States. After pointing out that by unleashing such a weapon the United States of America created a dangerous situation, he said: "As long as the world is constituted as it is, every country will have to devise and use the latest scientific devices for its protection. I have no doubt that India will develop her scientific researches and I hope Indian scientists will use the atomic power for constructive purposes. But if India is threatened, she will inevitably try to defend herself by all means at her disposal. I hope India, in common with other countries, will prevent the use of atomic bombs". It is refreshing to note that Nehru had a very lively awareness of the needs of India's security even before he assumed the office of the Prime Minister.

After he became Prime Minister, Nehru solemnly declared that India would use atomic energy only for peaceful purposes. "So far as we are concerned", he said in Lok Sabha on August 10, 1960, "we are determined not to go in for making atomic bombs



Shri K.R. Narayanan, Vice-Chancellor of Jawaharlal Nehru University delivering the convocation address at the IIT, Bombay.

and the like. But we are equally determined not to be left behind in the advance in the use of this new power. It is true that in the ultimate analysis a country which has atomic power fully developed can use it for good or evil purposes. And no declaration which I can make today will necessarily bind people in future, but I do hope that we shall create an atmosphere in this country which will bind every government in future not to use this power for evil purposes". Every government after the time of Nehru has reiterated this commitment to use atomic energy only for peaceful purposes, and has also re-emphasized its determination not to be left behind in the use of this new power.

To have freedom to develop nuclear energy for peaceful purposes is the hall mark not only of our technological independence but also of our political and economic independence. In the heyday of imperialism and colonialism, under-development in Asia, Africa and Latin America, was a direct consequence of the industrialisation and development of a small number of centres in Europe. These advanced centres dominated the colonial world by exchanging their technology and financial capital for raw materials and markets. The story is more or less the same today as pointed out by Francisco R. Sagasti. According to him, science and technology are becoming "the principal means through which a few industrialized countries will maintain and reinforce their domination over the Third World". With the rapid advance of space travel and the immense cost and sophistication of scientific research, the danger of technological hegemonism by a few countries, indeed by a power elite in a few countries, over the rest of the world is now a possibility.

Science and technology has only widened the historic gap between the developed and developing nations. It has been estimated that 95% of the world's expenditure on science and technology and 90% of the world's scientists and technologists are today concentrated in the industrialized

countries. The Third World countries command only 2% or 3% of the world's R & D resources. An added factor is that more than 50% of the world's budget on science and technology is directed towards the improvement of weapons and armaments. This massive misdirection of scientific and technological resources has not only contributed to the maldevelopment of world society but produced a new phenomenon that might be described as technological imperialism.

At the heart of the North-South division and the struggle for a new international economic order is the question of scientific and technological development. It is clear that the developing nations cannot tackle their gigantic problems of poverty, population, housing, malnutrition, disease etc., without the acquisition and development of scientific knowledge and technological know-how. We have also learned by experience that just like social and political institutions, technology cannot be blindly transferred from the advanced countries and transplanted in the developing countries. There is a lot of talk today of 'appropriate technology', 'the recovery and development traditional technologies', and the evolution of 'an endogenous' scientific and technological base, for meeting the challenge of development. Gandhian and Maoist approaches have been some times invoked in this context.

There is no doubt that small technologies and the upgradation of traditional technologies have an important and appropriate role to play in developing societies. Mass education along basic lines, primary health programmes for the people using 'barefoot doctors' or their counterparts, housing through the use of local materials and simple designs, low-cost mass-transport systems, improvement of agriculture through application of scientific methods—all these are relevant and essential. The Peoples Republic of China adopted such methods under Mao-Ze-Dong and have not abandoned them even today,

though they are trying to adapt them to changing conditions. The point that is often ignored is that the Chinese never neglected heavy industries—in fact the major share of investment after the Liberation went to heavy industries and not to agriculture, and sophisticated fields of science and technology like nuclear and space science received the highest priority in China. And today they are engaged in one of the most dramatic and massive attempts in history for the importation of science and technology from outside. I am not saying that either the small, self-reliant, model of technological growth attributed, not very correctly, to China or the current policy of China to import technology on a massive scale, is a model for the developing countries. What is clear is that in this rapidly changing world we cannot over-emphasize one or the other, and that both small technology and high technology are appropriate, if selected and applied to suit the actual conditions of a country; I would say that a mixed technology like mixed economy is both a fact and a necessity. It is necessary for us to climb the commanding heights of science and technology, if we are to give to the millions of our people the common benefits of small technology and if we are not to be left behind in the new technological revolution. Advance in basic theoretical aspects of science is as important as the application of science to the problems of economics and society. In China they have realized that they made a mistake in neglecting fundamental scientific studies during the Cultural Revolution and they are now trying to make up for it.

It is obvious that the development of fundamental sciences and its technological application go together, and that there should be some basic balance between science and society, between technology and culture, between knowledge and psychology, and between know-how and values. Science and technology have to be brought within the ambit of social control and responsibility
(Continued on page 540)

Need for three-language formula stressed

Shri Morarji Desai, former Prime Minister of India, inaugurated the diamond jubilee celebrations of the Dakshina Bharat Hindi Prachar Sabha held recently in Madras. In his address he called upon the propagators of Hindi to simplify the language so that it could become popular soon. He pointed out how Sanskrit, the richest Indian language, could not become the common language because it was difficult to learn.

Reiterating the need for a three-language formula, the former Prime Minister said that every Indian should learn Hindi besides mother-tongue and English. This would make the language simpler

said that English should continue to be taught in the schools as it would enable the country to maintain its link with the rest of world. He added that Article 351 of the Constitution required that the development of Hindi should reflect the composite culture of the country and the language should absorb the style and words from Sanskrit and all other languages. Translations from Hindi to other Indian languages and vice-versa would enrich Hindi and make it popular.

Madras Varsity to restructure courses

The Madras University proposes to restructure the BA &

carry marks comprising two components, continuous internal assessment by the college and external valuation by the university.

The Vice-Chancellor of the University, Dr. G. R. Damodran said that orientation courses would be held in a few months time so as to enable the college teachers to fulfil the objectives of the new restructured degree courses. A broad based education has been the ultimate objective and adequate flexibility has been provided thus enabling the students to break away from traditional combinations of subjects.

Workshop on question bank at Vallabh Vidyanagar

As part of its examination reforms programme, the Sardar Patel University organised a four-day workshop on 'Design and structure of question papers at the undergraduate level' at Vallabh Vidyanagar recently. In his opening remarks, Shri V. Natarajan, Project Officer in the Association of Indian Universities, said that the core of examination reforms lay in framing effective questions because 'as you ask, so you test'. He suggested a typical question paper which would have three parts, namely, (1) objective type questions; (2) short answer questions; and (3) essay type questions. He also suggested that fixed time could be allotted for answering each part.

Shri Natarajan emphasised that the question paper should be so designed as could test the various abilities of the student such as memory, comprehension, analytical power, computational ability and so on. He pointed out that before framing a particular question, the teacher should have a clear idea as to what specific ability he wanted to test through that question.

Referring to the objective type questions in the case of arts subjects, Shri Natarajan maintained that such questions could also be prepared in languages and literature but the teachers had to be fully acquainted with the subject.

The participants in the work-

CAMPUS NEWS

and richer. He also pleaded for a large inter-mingling of Hindi and non-Hindi people to facilitate fusion of ideas and evolve a better understanding. He wanted the regional language to be the medium of instruction from the primary school to the Ph. D. level but the study of Hindi should be encouraged to promote national integration.

Delivering the convocation address at the Sabha, which synchronised with the jubilee celebrations, the Karnataka Governor, Shri Govind Narain, said that Hindi speaking states should immediately adopt three-language formula so that the burden of learning the third language was borne equally in all parts of the country. Even if any southern state was not willing to implement the three-language formula for any reason, the northern states should adopt it immediately in order to strengthen national and cultural integration. Shri Narain

BSc courses from the academic year 1980-81. Under this new arrangement there will be six parts for both BA and BSc. Part I comprises the study of Tamil or other modern or classical languages and Part II includes English. Part III consists of two core courses at the advanced level and in Part IV the study of either one core course of four semester duration or two core courses of two semester duration each (both at the ordinary level) will be taken up. Part V comprises study of supporting courses. Community and Social Service is also being continued in the restructured degree courses and students have to get a satisfactory certificate from the heads of the institutions for having done the work.

A total of 29 papers have to be taken by the candidates during the six semester course and of this four papers will figure under examinations conducted by the college itself. Each paper will

shop were divided faculty-wise and subject-wise. Various ways of framing questions were discussed and question banks were prepared in different subjects. Steps would be taken to translate into practice the recommendations made at the seminar.

About 215 participants from the postgraduate departments of the university and from affiliated colleges attended the workshop.

Convention of chemists at Kurukshetra

Shri H.S. Brar, Governor of Haryana inaugurated a five-day convention of chemists at the Kurukshetra University. In his address, Shri Brar stressed the need to give scientific training to every student to enable him to appreciate and imbibe this discipline of thought and develop a scientific way of thinking. He felt convinced that the chronic problem of poverty in the country could not be solved without the aid of modern science. Scientific thinking could be of immense value to national development, he added.

Prof. J. Shanker of the Bhabha Atomic Research Centre, delivered the presidential address. He said that universities were the most suitable places for undertaking problems connected with national development. He stressed the need to organise extension work in the university on a large scale so as to bridge the discrepancy between what the science students do in their classrooms or laboratories and the problems they face in everyday life. He also spelt out the role of university teachers and researchers and said that the primary function was to discover new facts, create new knowledge and develop such processes in order to produce products needed by the society.

The convention was sponsored jointly by the Indian Chemical Society, the CSIR, the DST, the Department of Atomic Energy and the Institute of Chemists and was attended by 600 delegates including eminent scientists and researchers from all over the country.

Teachers' day celebrated at Mangalore

Speaking at the Teachers' Day celebrations in Mangalore, the Vice-Chancellor of Mysore University, Prof. K.S. Hegde, said that the present system of education was a highly evolved one and gave ample freedom and choice to choose the type of education to suit one's attitude. He asked the parents and teachers to be a little more patient and sympathetic towards the rebel youth as their behaviour was symptomatic of the changing values of life. Prof. Hegde however pointed out that there should not be any compromise in basic values like honesty, discipline and truthfulness. He felt that it had been the endeavour of education throughout to have conformity with the accepted values and ideals of the civilisation of the time.

In his paper on the education system, Shri K.D. Kini, Principal, Bhuvanendra College, said that neither the teacher nor the student was doing well in the present system. While the teachers were utterly inefficient and incompetent, the students were frustrated and disappointed and the social conditions too were not conducive for their healthy growth. Striking a note of self-analysis, he said the dismal picture could be improved and bright days could be seen as the glorious heritage of teacher student relation was still existing in the country and felt that the nation could depend upon this tradition once again to come out of the mess.

New educational strategy suggested

Inaugurating the NAEP programme at Hyderabad, the Andhra Pradesh Governor Shri K. C. Abraham, called for a new educational strategy for a more fruitful involvement in the developmental programme. He said that the objective of the new strategy should be to create an awareness among the rural people about their socio-economic situation and to bring amelioration through their individual efforts. Referring

to the progress of the NAEP in the state, the Governor said that it had reached the take-off stage having completed the preliminaries. He said there was a need to prepare the people psychologically for the adult education programme by creating a positive and favourable learning situation and added that the success of the programme depended largely on the coordinated efforts of various other departments.

Shri B. Venkatram Reddy, Education Minister of the State, said that adult education and drive against illiteracy was an off-shoot of the national movement and adult education had become a facet of national struggle.

The Minister hoped that about 8000 adult education centres would be set up in the state by the end of the year.

New feed for livestock evolved

Under the lab to land programme of transferring technology to the villages, the scientists of the Haryana Agricultural University have taken up a project of balanced feeding of livestock with a view to assessing the nutritional status of dairy animals. The survey conducted by the scientists has revealed that the animals in the state were getting insufficient quantities of protein. A mixture of molasses, urea, minerals and vitamins has been formulated and the required quantities of this feed are mixed with cereal straws of 'kadbi' which is then fed to the animals. This feed has found favourable response from the farmers. The scientists claim to have eroded some of the old notions in the minds of the livestock owners that cotton seed feeding to milch buffalo resulted in higher fat and milk production. Scientific studies have shown that this notion is not tenable and feeding of a ration containing cottonseed cake is as good as a ration having cottonseed. The university has also started a programme of cottonseed cake feeding to bring home to the farmers that the cottonseed cake has an edge over cottonseed.

Firm educational policy suggested

Inaugurating a three-day national conference of the All-India Federation of University and College Teachers Organisation in Bombay recently, Shri M. C. Chagla, an eminent jurist and former Union Education Minister, said that frequent change in the educational policy had resulted in waste of time and national resources. He felt that a firm national education policy must be evolved. Since the teachers played an important role in nation building, they must have a say in the formulation of the education policy.

Shri Chagla regretted that university education had become merely a status symbol and suggested that colleges should not be increased without maintaining a high standard of education and other facilities for it. He added that the student-teacher ratio must also be maintained.

He said English must be retained as the medium of instruction in higher education for the country's growth in the field of science and technology. English brought to our doorstep the wonders of science and technology.

Institute of natural law and order inaugurated

An Indian Institute of Natural Law and Order has been set up in Kurukshetra. The objective of the institute is to explore the sociological and jurisprudential aspects of the science of creative intelligence and transcendental meditation.

The institute was inaugurated by Justice M.H. Beg, former Chief Justice of India at the Kurukshetra University auditorium recently. In his address, Justice Beg said that the approach of natural law was a potent approach to the problems of law and order in every walk of society. He stressed the need to devise a new method and approach to attain a higher level of consciousness which would relieve men of destructive tendencies. He further spelt out the various implication of natural law and order.

Natural law, he said, was based on the principles which produced order. Natural law necessarily presupposed that there was something like unnatural law which produced disorder, anarchy and disharmony in the society and all efforts should be sincerely directed to remove the hurdles hampering the order. He suggested that the solutions to the problems of corruption, exploitation of the weak by the strong and nuclear arms lay within man's consciousness.

Maharshi Mahesh Yogi who blessed the newly formed Institute said that the basic assumption which underlined the natural law was to promote individual progress without creating hindrance in the progress of other individuals. He added that the formation of an Institute of Natural Law and Order was the intention of time, the whisper of present times and the need to devise practical mechanics in the field of jurisprudence or in other fields of learning was all the more necessary in the contemporary world when all types of systems of government had failed to achieve this goal.

Mr. Justice V.R. Krishna Iyer of the Supreme Court, who is also the President of the Institute, said that the conflict between good and evil, right and wrong, could not be resolved with the aid of legal law or any other external agency but with the approach of natural law. Justice Iyer said that he believed in recognising the infinite talent of every person and developing it to the maximum degree of divinity.

UGC project on tourism

The University Grants Commission has initiated its first pilot project on pilgrimages and tourism in Garhwal Himalayas for scientific planning and development action programmes. In the first phase the project will establish findings on the status of age-old pilgrimages, principal data on old pilgrim demographics and psychograph their attitudes and desire. The project will also prepare an inventory of recreation-

cum-cultural resources in scenic attractiveness, landscape-perception, floral and faunal excellence and cultural and natural heritage areas which would be preserved for the posterity and bench-marks for the scientists.

The second phase programme will be aimed at establishing network on transport and other tertiary services needed for the promotion of tourism and the third phase programme will deal with the study of impact of the activity on recreational and religious landscape.

The Director of the Institute of the Himalayan Studies of the Garhwal University has been named as the Chief Investigator of the project and the services of an ecologist, cultural anthropologist, geographer, sociologist, cartographer and a photographer would also be utilised in the successful completion of the project.

The UGC has also sanctioned a project of writing textbooks on tourism. This would be the first book on the subject to meet the growing need of the emerging discipline.

Training course on agriculture and rural development

The North-Eastern Council, Shillong, in collaboration with the Indian Institute of Management, Ahmedabad, organised a two-week training course on management of agriculture and rural development. The course was attended by twenty participants from the States and Union Territories.

The Secretary of the North-Eastern Council, Shri K.M. Mirani, said that the best contribution which the NEC made for the region was by way of providing them trained manpower. He hoped that the officials who had attended the course would, on their return to their respective states, use the training for proper benefit of the masses and that the State Governments in future would also be deputing officials for attending similar course.

Refresher course for English teachers

The regional centre of the Central Institute of English and Foreign Languages located at Shillong proposes to conduct a refresher course for the benefit of English teachers of colleges and universities who have not attended any summer institute or English Language Teaching Course and are interested in familiarising themselves with the recent developments in linguistics and language teaching. The course will consist of lectures, tutorials and would cover the subjects of (i) Linguistics; (ii) English grammar and usage; (iii) phonetics and spoken English; and (iv) problems of teaching English as a second language at the college and the university level.

Research centre at Kashmir

The University of Kashmir has decided to set up a Centre of Research for Development in the university so as to plan, coordinate and undertake scientific and technological research and development work intended to assist in the economic development of the region. There will be a separate Board of Research Studies for the Centre for implementing the programmes.

GAU undertakes research and training in pulses and oilseeds

The Indian Council of Agricultural Research has sanctioned two schemes of research and extension training in pulses and oil seeds at Derol, Rajkot and Baroda districts falling under the jurisdiction of the Gujarat Agricultural University. These schemes would involve an estimated expenditure of Rs. 21.36 lakhs and would help in boosting the production of pulses and oilseed crops in Gujarat to a significant extent.

Panel to review NAEP

The Government has set up a committee to review the national adult education programme. The committee will suggest steps for strengthening NAEP which was launched a year ago. It will also identify the weaknesses in the

programme and examine its different technical aspects. It will also go into the question of its funding.

The committee will be headed by Dr. D.S. Kothari, an eminent educationist and the other members include: Dr. Malcolm S. Adiseshiah, Shri J.P. Naik, Shri B.G. Verghese and Shri Habin Tanvir. The committee is expected to submit its report within four months.

Course on photography at Madurai

The Youth Welfare Department of the Madurai Kamaraj University proposes to organise a 7-day course on photography for the students of the colleges affiliated to the university during January and February 1980. During the course, techniques of photography, developing, printing, enlarging, retouching, etc. will be taught through practical sessions. Chemicals and solutions would be provided free and no fee for the course would be charged.

Kurukshetra organises camps for rural reconstruction

Under the programme of youth for rural reconstruction, the NSS unit of Kurukshetra University organised camps and the students of its affiliated colleges undertook the construction of boundary walls of village schools. They also completed the earth work on village approach road. Women students taught the women folk various crafts like stitching, knitting and sewing. They also worked on the local tirthas for their beautification, environmental improvement and tree plantation around them.

In all 1453 students participated in the camping programme sponsored by the Ministry of Education and Social Welfare in collaboration with the Government of Haryana.

University centre at Tellicherry

The Calicut University proposes to set up its centre at Tellicherry soon. About 60 hectares of land has been acquired and a sum of Rs 4 lakhs has been made available by the University Grants Commission for the purpose.

Panel for public relations course

The Mysore University has appointed a committee to study and advise the university on introducing public relations and tourism courses at the postgraduate level. Shri T.N. Narasimhamurthy, a member of the senate, has been appointed as the Chairman of the committee and Prof. Nadig Krishnamurthy, Head of the Journalism Department and Shri S. Pattabhiraman are the other members of the committee. The Chairman has been authorised to coopt two more members.

Agricultural fair at IARI

The Indian Agricultural Research Institute organised a two-day Krishi Vigyan Mela in New Delhi recently to educate the farmers about how best to make up for the widespread loss of kharif crop on account of drought conditions in most parts of the country. The fair laid emphasis on the cultivation of rabi crops like wheat, gram, mustard, etc. and the farmers were acquainted with the latest high-yielding varieties of wheat in particular.

Other highlights of the fair included display of the high yielding varieties of rice which the IARI had developed in recent years; display of new production technology for pulses and oilseeds; five new hybrids of bajra which were helping to increase the production of this rainfed crop in a very significant manner; and the method to develop algae, a substitute for the costly chemical nitrogen fertilisers.

UP universities to stick to admission schedule

The Uttar Pradesh Minister for Higher Education has announced that all universities in the State would stick to the last date of admissions fixed for the next session with a view to ensuring that examinations were completed latest by April or May. He said that all the vice-chancellors were informed accordingly.

The Minister also said that boycott of examinations or mass copying would not be tolerated and revaluation of examination papers would be allowed only in deserving cases.

Solar energy in agriculture and industry

India has begun in a limited way making use of solar energy in various fields, including agriculture and industry.

In agriculture solar energy is being used mainly for drying crops. At Annamalai University in Tamil Nadu, a paddy dryer has been constructed with one tonne capacity. It has a nine-day flat plate collector and an electrically-driven pump. Experiments have shown that the flat plate collector can dry moist grains even with fluctuating amounts of sunshine.

The College of Agricultural Engineering at Jabalpur, in Madhya Pradesh, is also using a solar powered blower. This is a black-painted cylindrical stack placed at the focal point of concentrator.

The Central Salt and Marine Chemicals Research Institute at Bhavnagar, in Gujarat has built a solar cabinet dryer which can dry magnesium carbonate at a cost of Rs. 400 a tonne, while drying by electricity costs Rs. 2,000 a tonne.

Indian scientists have also tested four types of solar cookers :

—Wooden hot box which is lined with blackened metal, has a top consisting of double-glazed solar panels with an adjustable silvered glass reflector. Summer and winter trials have shown that most dishes can be cooked within three hours. The maximum temperature achieved is 78 degrees celsius.

—Solar oven which employs a well-insulated cooking chamber with a double glazed top and eight silvered glass reflectors. The maximum temperature reached was 350 degrees celsius in summer and 250 degrees celsius in winter.

—Solar steam cookers use the heat from the sun to heat water circulating in a flat plate collector, and then pass it through a double-walled cooking chamber containing three food compartments. These cookers are slow and take up to two and a half hours to boil rice.

—another type of cooker uses an aluminium parabolic reflector to focus sunshine into a black-bottomed cooking pot. The reflector needs regular adjustments to match the movement of the sun.

Roorkee University scientists have designed, built and tested a solar ice-making machine using ammonia/sodium thiocyanate. It can produce two kilograms of ice a day at minus 5 degrees celsius.

Scientists at the Bharat Heavy Electricals Limited and the Indian Institute of Technology (Madras) have designed, in collaboration with the West German concern MMB, a 10 kilowatt solar thermal power plant for use in the rural areas. It produces electricity at 220 volts.

ICMR plans new strategy to curb diseases

Dr. V. Ramalingaswami, Director-General of the Indian Council of Medical Research said that the ICMR was proposing to launch massive programmes to take its medical technologies direct to the people and get the people themselves involved in the application of these technologies in an effort to curb diseases in the community. The Council had also decided to give high priority to large scale application of the numerous medical technologies already developed by the Council's scientists. He added that the Council would therefore work towards bridging the gap between knowledge and action in addition to conducting basic bio-medical research in frontier areas.

The new strategy Dr. Ramalingaswami said, would take the ICMR scientists away from ivory tower research to actual work in the disease-stricken communities. To start with the Tuberculosis Chemotherapy Centre in Madras would adopt some villages with a high incidence of the disease. Its scientists would work with doctors in the primary health centres and demonstrate

the value of the tuberculosis control technologies already developed at the ICMR.

ICMR scientists at the Vector Control Research Centre at Pondicherry would move out to villages to demonstrate mosquito control measures through environmental improvement and by the use of large-eating fishes in ponds and wells. The village people would be actively involved in the work.

The National Institute of Nutrition in Hyderabad and the Institute for Research in Reproduction in Bombay would also take their technologies to the rural people.

Prof. Ramalingaswami said that the ICMR was also trying to involve medical scientists all over India in the formulation of research programmes for the ICMR.

Need for food security system

Delivering a memorial lecture in Madras, Dr. M.S. Swaminathan, Secretary in the Ministry of Agriculture and Irrigation, said that food security system was the most urgent need in the country and the country had to ensure that no one's physical or mental growth was affected for lack of food or by malnutrition. He outlined a five point programme to implement the food security system. He said that the needs of the system were ensuring protection to ecological infrastructure, appropriate technology, building grain reserve and improving post-harvest technology, social security and nutrition education.

He said degradation of ecological infrastructure would ruin the future and a public awareness should be created to protect it. Under an appropriate technology stability of production and stability of income to the landless should be ensured. The available human energy should be made use of to have a pivotal role in our system.

Dr. Swaminathan said that more attention should be paid to the qualitative aspect of stored grains. Unless the quality aspect was ensured we would be doing a great damage to the already undernourished and malnourished people by inflicting diseases.

A list of Doctoral Theses Accepted by Indian Universities

PHYSICAL SCIENCES

Mathematics

1. Bahadur, Neera. Investigations in the theory of geometric structures and their foliations. University of Delhi.
2. Bhaskara Rao, Kotikalapudi. On some problems in wave propagation in micropolar elastic solids. Andhra University.
3. Gurdarshan Singh. On wave propagation in non-homogenous viscoelastic media. Punjabi University.
4. Ratnam Naidu, Sakuru Venkata. Studies in complete inner product spaces and applications to self dual manifolds. Andhra University.
5. Sharma, H.K. Contributions to the fixed charge problems. Indian Institute of Technology, Kanpur.
6. Vaidya, Darshana. Multiplier problems of vector valued Segal algebras. Indian Institute of Technology, Kanpur.
7. Veerabhadraiah, R. Non-steady and steady flows in a porous medium. Bangalore University.

Statistics

1. Muddapur, Mahadevayya Veerayya. Some topics in stochastic processes. Karnatak University.

Operational Research

1. Patkar, Vivek N. Contributions to geometric programming. University of Delhi.

Physics

1. Bhalla, Ravi Kumar. A Study of the 8 MeV track microton and its beam energy measurement using E.E. scattering. University of Poona.
2. Elunalai, K. Molecular constants of some XY_n type molecules by kinetic constant method and mass dependence of coriolis coupling constants. Sri Venkateswara University.
3. Gupta, Prabha. Quantum mechanical study of collisions of electrons with atoms and molecules. Meerut University.
4. Kalani, S. Studies on some effects of impurities in crystals. Madurai, Kamaraj University.
5. Kundu, Mohanlal. Crystal structure of potassium dipicrylamine and molecular configurations of some salts of dipicrylamine. University of Burdwan.
6. Mehta, Shobha. X-ray K-absorption investigation of some complexes of cobalt. University of Indore.
7. Narayan, Ramesh. A new approach to the compressibility of ions of ionic crystals. Bangalore University.
8. Parabrahma Reddy, P. Spectroscopic investigations on certain transition metal ions in calcium and strontium tartrate tetrahydrate single crystals. Sri Venkateswara University.
9. Sharma, Jagdish Chandra. Theory of first, second and third order strain derivatives of dielectric constraints of ionic crystals. Agra University.
10. Sharma, Krishna Kumar. Spectroscopic studies of some aromatic molecules. Indian School of Mines, Dhanbad.
11. Soman, Shreepad Trimbak. Studies on optical absorption and dislocation density in electrolytically coloured pure and doped alkali halides. Nagpur University.
12. Supekar, Sunil Bhalchandra. Dielectric investigation of bioelectric materials. University of Indore.

Chemistry

1. Chakraborty, Manisha. Solvent extraction of Zirconium with sulphoxides. Utkal University.
 2. Chakraborty, T.K. Kinetic studies on oxidation of some organic sulphur compounds. University of Jabalpur.
 3. Chandra Ballabha. Studies in the preparation of 6-Amino Penicillanic acid and its utilisation in the synthesis of potentially useful analogues of Penicillins. Meerut University.
 4. Dharmadhikari, Dattatray Mahadeo. Structural and electrical properties of Franklinite and related oxides. Nagpur University.
 5. Jain, Ramesh Chand. Studies on block and graft copolymers of diones with vinyl monomers. Agra University.
 6. Kapadia, R.N. Studies on osmotic membranes. Saurashtra University.
 7. Khunt, V.N. Studies on optical activity. Saurashtra University.
 8. Makhijani, Santosh Dayaram. Studies on some metal chelates in solution. Nagpur University.
 9. Mishra Madan Gopal. Studies on some new inorganic ion-exchangers. Jiwaji University.
 10. Prasanna Chith, B.S. Studies on metal complexes: Spectro-photometric, pH metric and polarographic study of resacetodhenone oxide complexes of Ti, V, Cr, Mn and Ni. Sri Venkateswara University.
 11. Rastogi, Yogesh Chandra. Studies in kinetics and mechanism of oxidation of substituted hydroxy acetophenones and their methyl ethers by leadtetraacetate. Agra University.
 12. Rathi, Umesh Kumar. Physico-chemical studies of complexes with substituted hydroxy acetophenones and oxime. Agra University.
 13. Sahni, Gitika. Study on 'Inhibin'—A postulated anti-FSH principle of testicular origin: Isolation, purification and characterisation. Agra University.
 14. Saxena, Suresh Chandra. Kinetic study of silver catalysed oxidation of L-hydroxy monocarboxylic acids, dl-atrolactic isobutyric, mendelic and benzilic acid by potassium peroxydisulphate. Agra University.
 15. Sharma, Anil Kumar. Chemical components of Dalbergia sissoo pods and sensitized photooxidation of chalcones. University of Delhi.
 16. Sharma, Dalip Singh. Electro-chemical aspects of the interaction of tri- and tetraphosphates with yttrium, lanthanum and gadolinium cations. University of Delhi.
 17. Shrivastava, Santosh. Studies in metal complexes of some oximes and related Schiff's bases. Jiwaji University.
 18. Sirohi, Satendra Jit Singh. Kinetics and mechanism of oxidation of phenols by Ce(IV). Meerut University.
 19. Venkatachalapathi, K. Studies on the determination of stability constants of binary and ternary complexes of chromium (III). Sri Venkateswara University.
- #### Earth Sciences
1. Muley, Mahesh Vasudeo. Geology of the graphite deposits of Gujarat State with special reference to their occurrence, origin beneficiations and industrial application. M.S. University of Baroda.
 2. Rangaraja, S. Stratigraphy and sedimentology of the Siwalik Molasse in a part of Panjab Sub-Himalaya. University of Delhi.

Engineering and Technology

1. Athappan, R.M. Structure and catalytic activity of NiO-Al₂O₃ systems. Indian Institute of Technology, Kanpur.
2. Dutta, Swapan Kumar. Studies on effect of ultrasonics on the rate of diffusions. University of Burdwan.
3. Nambiar, K.R. Treatment of high nitrogenous wastes by flocculating algal-bacterial system. Indian Institute of Technology, Kanpur.
4. Ramekkrishna, R. S. Some iterative techniques in digital image restoration. Indian Institute of Technology, Kanpur.
5. Sinha, S.N. Two dimensional laminar and turbulent separating flows over backward facing steps and rectangular cavities. Indian Institute of Technology. Kanpur.

BIOLOGICAL SCIENCES

Marine Biology

1. Gopalakrishna Pillai, N. Microbenthos of a tropical estuary. University of Cochin.
2. Mohan, M.V. Studies on the teredinids of Cochin harbour. University of Cochin.
3. Remani, K.N. Studies on the effect of pollution with special reference to benthos in Cochin backwaters. University of Cochin.

Botany

1. Barik, Sudhakar. Role of microorganism in the degradation of pesticides in soils. Utkal University.
2. Bhatnagar, Ashok Kumar. Morphology and embryology of some taxa of controversial affinities. University of Delhi.
3. Chauhan, Govind Singh. Genetical analysis of quantitative characters in *Vigna unguiculata* (L) Walp. Jiwaji University.
4. Jain, Neelam. Physiological aspects of phosfon on selected forage plants: *Vigna unguiculata* (L) Walp and *Avena sativa* L. var. 3021. Jiwaji University.
5. Joshi, Inderjit. Development of soil microflora in relation to plant succession in certain areas of Chambal Ravines. Jiwaji University.
6. Katiyar, Kamlesh. Palyonoligcal studies of Rosales. Gauhati University.
7. Nandkar, Pralhad Barsuji. Observations on the algae growing in polluted water. Nagpur University.
8. Nazma. Studies on the durability and anatomy of certain woods: A few dicotyledonous taxa. Andhra University.
9. Padhi, Balabhadra. Studies on the variability in *Pyricularia oryzae* Cav., the fungus causing blast disease of rice. Utkal University.
10. Patil, Hachchappagouda Shantappagouda. Studies on the comparative ecology of the various species of algae with a view to select the best for increasing the efficiency of sewage oxidation ponds. Karnatak University.
11. Sarojini Menon, V. Algal physiology: Some aspects of relationship between mitochondria and chloroplasts. Madurai, Kamaraj University.
12. Thakur, Deep. Population differentiation in *Boerhaavia diffusa* Linn. Jiwaji University.
13. Tuteja, Subhash Chander. Vegetational studies of Sheopur-Kalan and S. Balgarh Tehsils of Morena District (M.P.). Jiwaji University.
14. Ugemuge, Nana Kamaji. Flora of Nagpur District with special reference to medicinal plants and embryological observations on *Acacia*, *Mucuna* and *Psoralea*. Nagpur University.
15. Upadhye, Vitthalrao Eknath. Morphological studies of the Deccan intertrappean flora of Mohoaonkalan, M.P., India. Nagpur University.
16. Verma, Satish Kumar. Morphological studies in the family Acanthaceae. Meerut University.

Zoology

1. Bhattacharjee, Aloka Ashit Baran. Early development of the genital tract in staged human embryos. Nagpur University.
2. Deshpande, Sudhakar Vithalrao. Studies in Coleoptera with special reference to scarabaeoid fauna of Marathwada Region. Marathwada University.
3. Ghare, Dilip Nagorao. Studies on the biology of the cestode parasites of birds in Maharashtra. Marathwada University.
4. Huilgol, Narayan Venkatrao. A study on the effects of certain chemicals on some fresh water forms. Nagpur University.
5. Kotak, Vibhakar Chunilal. Certain histoenzymological and endocrinological observations on the reproductive cycles of the Indian feral blue rock pigeon, *Columba livia* G. M.S. University of Baroda.
6. Koundinya, P. Ranganath. Studies on physiological response of the fresh water telecast, *Tilapia mossambica* (Peters) to pesticide impact. Sri Venkateswara University.
7. Subbiah, G.N. Thermobiological studies in the developmental tissues of a polikilotherm. Madurai Kamaraj University.
8. Vijayakumar, Munshi. Effects of nuclear polyhedrosis virus of the armyworm, *Mythimna (Pseudalactia) separata* on albino rats. Karnatak University.

Medical Sciences

1. Murthy, Dwarkanath K. Investigations on the effects of some drugs in laboratory animals: A cytogenetical approach. Osmania University.
2. Parekh, K.S. Antibacterially, pharmaceutically active substances from marine sources. Saurashtra University.

Agriculture

1. Dabholkar, Arvind Rangarao. Inheritance of resistance to seed moulds caused by *Curvularia lunata* in *Sorghum bicolor* (L) Moench. University of Indore.
2. Daulta, Bharpur Singh. Studies on some breeding investigations and establishment of early selection criteria in grapes, *Vitis vinifera* L. Haryana Agricultural University.
3. Giri, Gajendra. Grain yield and moisture use efficiency of dryland wheat as affected by use of mulch and transpiration suppressants. Agra University.
4. Pawar, Dattatraya Harischandra. Effect of antitranspirants, straw mulch and leaf stripping on growth, yield, moisture use and uptake of nutrients by hybrid sorghum, *Sorghum bicolor* (L) Moench under dryland conditions. Marathwada Agricultural University.
5. Shrivastava, Sukh Ram. Genetic analysis of yield and its components in linseed, *Linum usitatissimum* Linn. Jawaharlal Nehru Krishi Vishwa Vidyalaya.
6. Verma, Sohan Lal. A study on fluorine accumulation in plants in relation to crops, variety, fertility level and soil amendments. Haryana Agricultural University.

Veterinary Science

1. Ayyagari, Veerebhadru. Evaluation of intrapopulation selection methods and additive and non-additive gene effects of egg production in chickens. Agra University.
2. Bansal, Rajendra Pal. Studies on development of tissue culture Rinderpest vaccine using lamb kidney cell culture system. Agra University.
3. Harpeet Singh. Comparative genetic structure of different grades of Holstein Zebu crossbred cattle. Agra University.
4. Khoda, V.K. Genetic studies of wool traits in Muzafarnagari sheep. Agra University.
5. Sadhana Kumari. Rumen microbes in relation to urea feeding. Agra University.

Additions to A. I. U. Library

- Agochiya, Devendra. *Youth leadership in India*. Delhi, Vishwa Yuvak Kendra (c1978) 111p.
- Agruso, Victor M. *Learning in the later years: Principles of Educational Gerontology*. New York, Academic, 1978. ix, 149 p.
- Ashby, Eric. *Reconciling man with the environment*. London, Stanford, 1978. vii, 104p.
- Astin, Alexander W. *Preventing students from cropping out*. San Francisco, Jossey-Bass, 1977. xv, 204p.
- Australian Vice-Chancellors' Committee, Canberra. *Conference on communications and information services (2nd) Victoria, 1978: Proceedings and papers*. Canberra, Author, 1979. 42p.
- Biehler, Robert F. *Psychology applied to teaching*. Boston, Houghton Mifflin (c1972) xiv, 873p.
- Bloom, Benjamin S. *Human characteristics and school learning*. New York, McGraw-Hill, 1976. xii, 284p.
- Cochran, William G. and Cox, Certrude M. *Experimental designs*. New York, Wiley (c1957) xiv, 611p.
- Davis, Bernard D. and Flaherty, Patricia, ed. *Human diversity: its causes and social significance*. Cambridge, Ballinger (c1976) xiv, 248p.
- DeRebello, Daphne M. *Formal schooling and personal efficacy*. Delhi, Sterling, 1979. xix, 151p.
- Evans, Ellis D. *Transition to teaching*. New York, Holt, Rinehart and Winston (c1976) xi, 156p.
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- Glaser, William A. *Brain drain: Emigration and return: Findings of a UNITAR multinational comparative survey of professional personnel of developing countries who study abroad*. Oxford, Pergamon, 1978. xlvii, 324p.
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- India. Ministry of Education and Social Welfare. *Working group on universalisation of elementary education: Interim report*. Delhi, Author, 1978. 27p.
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- Lakdawala, D.T. *Optimum utilisation of educational expenditure in Gujarat*. Ahmedabad, Sardar Patel Institute of Economic and Social Research, 1978. 269p.
- Ness, Frederic W. *Uncertain glory: Letters of cautious but sound advice*. San Francisco, Jossey-Bass, 1977. xii, 154p.
- Paris, OECD. *Creativity of the school: Conclusions of a Programme of Enquiry*. Paris, Author, 1978. 165p.
- . *Education policies and trends: A report*. Paris, Author, 1977. 44p.
- . *Inter-sectoral educational planning*. Paris, Author, 1977. 307p.
- . *Public expenditure on education*. Paris, Author, 1976. 98p.
- . CERI. *Innovation in in-service education and training of teachers: Practice and theory*. Paris, Author, 1978. 63p.
- Peters, R.S., ed. *John Dewey reconsidered*. London, Routledge and Kegan Paul, 1977. viii, 128p.
- Reading, Hugo F. *Dictionary of Social Sciences*. London, Routledge and Kegan Paul, 1977. 231p.
- Rieke, Richard D. and Sillars, Malcolm Osgood. *Argumentation and the decision making process*. New York, Wiley (c1975) vii, 312p.
- Scheffe, Henry. *Analysis of variance*. New York Wiley (c1959) xvi, 477p.
- Shah, Amita, ed. *Youth power in Gujarat: Diary of events, Dec. 1973-March 1974*. Delhi, Vishwa Yuvak Kendra (c1977) 113p.
- Van de Graaff, John W. and others. *Academic power: Patterns of authority in seven national systems of higher education*. New York, Praeger (c1978) xiv, 217p.

Convocation Address

(Continued from page 532)

and made to minister to the needs and aspirations of man instead of helping to consolidate historic inequalities and creating new and explosive dichotomies in the world. One would go further and plead for a human face for science instead of its aggressive mechanical face or its abstract formless face that alienates it from people and society. Science needs to be popularized and a little prettified, if I may say so. The sense of wonder to which Einstein referred has to be restored to science, and the

creations of science have to be invested not with fear and horror but with a sense of social utility and a touch of the aesthetic. Robert Louis Stevenson in one of his essays talked of the magic of electricity and wrote that a sedate electrician sitting somewhere in a backroom pushes a button "and all the street lamps burst forth suddenly into song". Is it too idealistic to imagine that a creative writer of the future will talk of nuclear energy in the same vein. One thing seems to be certain, unless science and techno-

logy are integrated to the needs, values and aspirations of man and regulated, in a very broad sense and not in the sense of interference with the freedom of research, by the organised will and purpose of society it might well turn out to be a mindless, formless monster let loose in a defenceless "global village".

[Excerpts from the convocation address delivered by Shri K. R. Narayanan, VC, JNU, at the IIT, Bombay.]

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2. Last date for receipt of applications for the posts at Sr. No. 21 and 32 will be 31st December, 1979 instead of 12th October, 1979.
3. The last date for receipt of applications for all other posts is extended upto 26th October, 1979.

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7. Senior Scientific Officer (Biophysics)
One (Reserved for S/Castes candidates)

Pay: Rs. 1100-50-1600.

8. Senior Research Officer

One

(for Human Nutrition Unit)

Pay: Rs. 1100-50-1600.

9. Research Officer (Biostatistics)

Two

Pay: 700-40-900-EB-40-1100-50-1300.

Note: One post of Research Officer is for Churu Distt. Project, Rajasthan.

10. Audiologist

One

Pay: Rs. 840-40-1000-EB-40-1200.

11. Application Programmer

One

(For Computer Facility)

Pay: Rs. 700-40-1000-50-1600.

12. Operator (for Computer Facility)

One

Pay: Rs. 650-30-740-35-880-EB-40-960.

13. Junior Research Officer (Non-Medical)

One

(for Hospital Administration)

(Reserved for S/Castes candidates).

Pay: 650-30-740-35-880-EB-40-960.

14. Assistant Stores Officer

One

Pay: Rs. 550-25-650-30-740-35-880-EB-40-1040.

15. Technical Supervisor (Veterinary)

One (Reserved for S/Castes candidates).

Pay: Rs. 550-25-750-EB-30-900.

16. Draftsman Grade-III

One (Reserved for S/Tribes candidates).

Pay: Rs. 260-6-290-EB-6-326-8-366-EB-8-390-10-400.

17. Dark Room Assistant

One (Reserved for S/Tribes candidates).

Pay: Rs. 260-6-290-EB-6-326-8-366-EB-8-390-10-400.

18. Plumber

One (Reserved for S/Tribes candidates).

Pay: Rs. 260-6-326-EB-8-350.

19. Receptionist

Two (Reserved for S/Tribes candidates).

Pay: Rs. 330-10-380-EB-12-500-EB-15-560.

20. Institute Guard

Two (Reserved for S/Tribes candidates).

Pay: Rs. 196-3-220-EB-3-232.

21. Mali

One (Reserved for S/Tribes candidates).

Pay: Rs. 196-3-220-EB-3-232.

Upper Age Limit

50 years for teaching posts and 30 years for non-teaching posts relaxable for Government servants Scheduled Castes and Scheduled Tribes candidates or otherwise exceptionally qualified candidates. Upper age limit up to 5 years is relaxable in the case of S/Castes and S/Tribes candidates.

Note

(i) Scheduled Castes and Scheduled Tribes candidates called for interview will be paid travelling allowance as per rules of the Institute.

(ii) The essential qualifications are relaxable at the discretion of the Selecting Authority.

Application forms and detailed information sheets can be obtained personally or on written requests accompanied by a self addressed stamped (0.60 paise) envelope (23×8 cm.).

ALL INDIA INSTITUTE OF MEDICAL SCIENCES

ANSARI NAGAR,

NEW DELHI-110016

Advertisement No. 5/79 Estt. I

Applications will be received by the Director, All-India Institute of Medical Sciences, Ansari Nagar, New Delhi-16 from Indian citizens up to the 31st October, 1979 on the prescribed forms available on request for recruitment to the following temporary posts for deputation to the Institute of Child Health, Kabul:

1. Assistant Professor

One each for (i) Paediatric Surgery (ii) Orthopaedic Surgery (iii) Surgery and (iv) Anaesthesiology.

Pay Scale

Rs. 1700-60-2060 inclusive of N.P.A.

2. Medical Records Officer

One Post.

Pay Scale

Rs. 550-25-750-EB-30-900.

The incumbents of the above posts are likely to be deputed to Institute of Child Health, Kabul initially for a period of one year, which is likely to be extended from time to time but not

exceeding three years. Their deputation to Institute of Child Health, Kabul will be governed by the terms and conditions finalised by the Ministry of External Affairs from time to time under the I.T.E.C. Programme. In addition to salary, other allowances/facilities as prescribed by the Ministry of External Affairs under the I.T.E.C. Programme would be admissible.

On their reversion from Institute of Child Health, Kabul the term of recruitment of the incumbents of the aforesaid posts will stand terminated and the All-India Institute of Medical Sciences will have no responsibility to absorb them on their reversion from the Institute of Child Health, Kabul.

Upper Age Limit

50 years for teaching posts and 30 years for non-teaching posts relaxable for Government servants and S/Castes and S/Tribes candidates or otherwise exceptionally qualified candidates. Upper age limit upto 5 years is relaxable in the case of S/Castes and S/Tribes candidates.

Application forms and detailed information sheets can be obtained either personally or on a written request accompanied by a self-addressed stamped (0.60 paise) envelope (23 cm×8 cm).

**PANJAB UNIVERSITY
CHANDIGARH**

Advertisement No. 22/79

Applications are invited for the following posts so as to reach the Registrar, Panjab University, Chandigarh, by 19th November, 1979 along with postal orders of Rs. 10/- each:

1. Reader in Sanskrit (Research).....1.
(Pay Scale: Rs. 1200-50-1300-60-1900) at VVBIS and IS, Hoshiarpur.

**Qualifications
Essential**

(i) A first or high second class Master's degree of an Indian University or an equivalent qualification of a foreign University in the relevant subject viz., Sanskrit, with bright academic record;

(ii) Either a research degree of doctoral standard or published research work of high standard in the subject concerned in journals of repute in Vedic language and literature.

(iii) About five years' experience of teaching Post-graduate classes and or research in Vedic Language and literature.

(iv) Competence to guide research.

Desirable

Knowledge of French, German and Avestan.

2. Reader in Library Science.....1.

(Pay Scale: Rs. 1200-50-1300-60-1900) at P.U. Library, Chandigarh.

**Qualifications
Essential**

(i) A first or high second class Master's degree of an Indian University or an equivalent

qualification of a foreign University in the relevant subject with bright academic record;

- (ii) Either a research degree of doctoral standard or published research work of high standard in the subject concerned in journals of repute;
- (iii) About five years' experience of teaching Post-graduate classes and/or research; and
- (iv) Competence to guide research. Evidence of being engaged in making innovation in teaching methods and production of standard teaching material, will be an additional qualification.

Candidates who do not possess a doctoral degree are required to submit 10 Typed/Cyclostyled copies of brief resume of their published work.

Persons already in service should route their applications through proper channel. Incomplete forms and those received after the due date will not be entertained. Serving employees, may however, send their applications on the prescribed proforma direct to the University. They may route another copy through their department. They will be allowed to present themselves for interview only on the production of a 'No Objection Certificate' from their employers. Canvassing in any form will disqualify a candidate.

Application forms can be obtained from the Cashier, Panjab University, Chandigarh, personally on payment of Rs. 2/- or by making a written request to the Finance and Development Officer, Panjab University, Chandigarh, accompanied with self-addressed stamped envelope of 23x10 cms. and a postal order for Rs. 2/- drawn in favour of the Registrar, Panjab University, Chandigarh.

UNIVERSITY OF RAJASTHAN JAIPUR

Advertisement No. 10/79

Applications are invited (through proper channel in case of those who are already in employment) so as to reach this office on or before Wednesday the 31st October, 1979 in the prescribed form available from the Registrar's office on pre-payment of Rs. 4/- (Rs. 3/- extra in case required by post) for the undermentioned posts (including the posts in the Institute of Correspondence Studies and Continuing Education):

1. Professors

In the scale of Rs. 1500-60-1800 - 100 - 2000- 125/ 2- 2500. Tagore Professor in History and Indian Culture—1 and Professor in History—1; Public Administration—1; Business Management—1; Mathematics—1 and Jain Studies—1.

2. Readers

In the scale of Rs. 1200-50-1300-60-1900. Hindi—3, Modern European Languages

(German—1, Music—1, Public Administration—1, Political Science—1, Philosophy—1, Geography—1, Psychology—1, Sociology—2, Dramatics—1, Economics—1, Business Management—1, Law—1 and Education—1.)

(The above posts of Readers include one post each in the subjects of Hindi, Economics, Public Administration, Sociology and Education for the Institute of Correspondence Studies and Continuing Education and the same are temporary but likely to be made permanent).

3. Lecturers

In the scale of Rs. 700-40-1100-50-1600. Modern European Languages (Russian—1, Philosophy—2, Sanskrit—4, Economics—5, Geography—1, History—6, Psychology—1, Public Administration—2, Dramatics—3, South Asia Studies Centre—1, Persian—1, Journalism—2, Statistics—1, Zoology—2, Business Administration—7, Business Management—1 and Education) 10.

(The above posts of Lecturers are inclusive of the vacancies in the Institute of Correspondence Studies and Continuing Education. These are Sanskrit-1, Economics-3, History-2, Public Administration-2, Journalism-2, Business Administration-5 and Education-10, and the same are temporary but likely to be made permanent).

4. Case Analyst

In the scale of Rs. 400-40-800-50-950.

5. Research Associates

In the grade of Rs. 700-40-900-EB-40-1100-50-1300. Economics-1, History...3, Sociology-1 and South Asia Studies Centre...2.

6. Director

Institute of Correspondence Studies and Continuing Education...1 in the Scale of Rs. 1500-60-1800- 100- 2000- 125/2- 2500 (Temporary but likely to be made permanent).

7. For Special Assistance Programme in Philosophy

- (i) Reader in Indian Philosophy-1 In the Scale of Rs. 1200-50-1300-60-1900.
- (ii) Lecturer in Philosophy of Law/Philosophy of Science-1. in the grade of Rs. 700-40-1100-50-1600.
- (iii) Research Associates Indian Philosophy-1, Logic and Philosophy of Science-1 and Philosophy of Law/Social Philosophy, Political Philosophy/Moral Philosophy-1, in the scale of Rs. 700-40-900-EB-40-1100-50-1300.

8. For University Leadership Project in Political Science

(temporary but likely to be made permanent):

- (i) Reader-1 in the grade of Rs. 1200-50-1300-60-1900.
- (ii) Lecturer (Translation)-1 in the grade of Rs. 700-40-1100-50-1600.

9. For University Service and Instrumentation Centre

(Temporary but likely to be made permanent)

- (i) Senior Scientific Officer-1 In the grade of Rs. 1100-50-1600.
- (ii) Scientific Officer-2, in the grade of Rs. 700-40-900-EB-40-1100-50-1300.

The details of qualifications etc., may be obtained alongwith the prescribed application form or separately as the candidates may desire. The benefits of Provident Fund, D.A. and other allowance will be admissible as per rules of the University. Candidates desiring to apply for more than one post must send their separate application for each post. Candidates will be called for interview at their own expense. Incomplete applications shall be rejected without making any reference.

Persons who have already applied in response to University Advertisement Nos. 9/78, 1/79, 6/79, 7/79 need not apply afresh (except for the following posts):

Professor—History, Public Admn., and Bus. Management.

Reader—Economics, and Public Administration.

Lecturers...South Asia Studies Centre, Zoology and Business Admn. Special Assistance Programmed in Philosophy—Reader in Indian Philosophy.

University Leadership Project in Pol. Sc....Lect. in Translation). They should intimate to the University that they are—still desirous to be considered for the post applied for on the basis of their earlier application sent in response to the aforesaid advertisements. They may also send the particular of their additional qualifications and experience etc. acquired since then on plain paper by 31st October, 1979.

The University reserves the right to alter the number of posts in any cadre or subject. Higher start may be given to deserving candidates. Selected candidates are liable to be posted in any unit of the University. The University may consider anyone for appointment as Professor though he may not have applied for the post.

Persons who resorted to unfair means at any examination and were punished therefor OR were convicted by a Court of law for any offence involving moral turpitude, are not eligible to apply. Retired persons also need not apply.

REGISTRAR

NORTH-EASTERN HILL UNIVERSITY

LOWER LACHAUMIERE, SHILLONG-1.

No. Advt/P-7/79

Dated 28th September, 1979.

Applications are invited for the following posts in the College of Agriculture, Ghaspani (Medziphema), Nagaland:

Sl. No.	Post	No. of vacancy	Pay
1.	Lecturer in Agriculture Botany (Plant Breeding and Genetics).	1	Rs 700-40-1100-50-1600/-
2.	Lecturer in Agriculture Zoology and Entomology (Entomologist).	1	Rs 700-40-1100-50-1600/-
3.	Lecturer in Chemistry and Soil Science (Soil Scientist).	1	Rs 700-40-1100-50-1600/-
4.	Lecturer in Agriculture [Engineering]	1	Rs 700-40-1100-50-1600/-
5.	Lecturer in English	1	Rs 700-40-1100-50-1600/-

Essential Qualification

(Sl. No. 1, 2, 3, 4 and 5)

- A consistently good academic record with at least 1st or high second class (B in the Seven Point Scale) at the Master's degree in a relevant subject or an equivalent degree of a foreign University; following a good degree in Agriculture.
- An M. Phil degree or a recognised degree beyond the Master's level or published work indicating the capacity of a candidate for independent research work.

Desirable

Serial No. 1

Plant Breeding and Genetics

A Doctorate in Plant Breeding, Agricultural Botany or Genetics and Plant Breeding or published work of a high standard in the subject.

Serial No. 2

Entomology

A doctoral degree in Entomology or published work of an equally high standard or at least three years teaching experience in an Agriculture University or Agriculture Degree College.

Serial No. 3

Soil Science

A Doctoral Degree in Soil Science.

Serial No. 4

A Doctoral Degree in Agricultural Engineering.

Candidates appointed should be prepared to serve anywhere within the jurisdiction of the North-Eastern Hill University, although presently they will be posted in Medziphema District, Kohima.

Applications on plain paper indicating name, present address, age, qualifications in detail, etc., etc., should reach the undersigned on or before **October 30, 1979**, together with an Indian Postal Order for Rs 5/- (Rs 2.50 in case of Scheduled Tribe/Scheduled Caste candidates) payable to the "North-Eastern Hill University", Shillong as application fee.

NOTE

- Persons in service should submit their application through their employers.
- Candidates called for interview will have to appear before the Selection Committee at the Office of the North-Eastern Hill University or at any place specified. A return second class railway fare shall be paid by the University from the place of start to place of interview and back.
- All appointments will be subject to a period of probation.
- These posts are open to all citizens of India who satisfy the required qualifications but some preference may be given to equally qualified Scheduled Caste/Scheduled Tribe candidates.
- The University reserves the right to make appointments under Statute 21 of the Act, if necessary.

R. Kharlukhi
REGISTRAR

NARENDRA DEV UNIVERSITY OF AGRICULTURE AND TECHNOLOGY

FAIZABAD-224001 (U.P.)

Advertisement No. 5/1979

Applications are invited for the following posts under this University on the prescribed form obtainable from the undersigned by sending a crossed postal order of Re. 1/- endorsed in favour of Comptroller, N.D. University of Agriculture and Technology, Faizabad alongwith self addressed envelope stamped for Rs. 3.30. The form duly filed in should reach the office of the undersigned positively on or before **31.10.1979** alongwith a crossed postal order of Rs. 10/- in case of general candidates and of Rs. 6/- in case of S.C./S.T. candidates endorsed in favour of the Comptroller, N.D. University of Agriculture and Technology, Faizabad. Higher starting salary in case of well deserving candidate is permissible. Candidates having more than one third class in their entire academic career are likely to be rejected. Scheduled Caste/Scheduled Tribe or Backward class candidates will be given preference in case found suitable.

Applications received without application fee in shape of postal order as mentioned above will be rejected.

1. Assistant Vegetable Breeder

(One) in the pay scale of Rs. 550-1200.

Essential Qualification

At least 2nd Class B.Sc. (Ag), 2nd Class M.Sc. (Ag) in Vegetable Crops/Horticulture (Olariculture)/Genetics and Plant Breeding with specialisation in Vegetable Breeding with three years' experience in Teaching/Research/Extension Education in particular subject OR Ph.D. with one year's experience in the subject.

Desirable Qualification

Aptitude to work in rural areas.

2. Assistant Librarian

(One) in the pay scale of Rs 550-1200.

Essential Qualification

At least 2nd Class Bachelor's Degree with Diploma/Degree (B.Lib.) in Library Science with five years' experience for Diploma holders Or three years' experience for Degree holders in Library Science in the relevant field.

Desirable Qualification

1. At least 2nd Class Master's Degree in Library Science OR in relevant field. The experience of work in the Library of a University/Institute/Council Or any other organisation of repute.

3. Subject Matter Specialist (Plant Protection)

(One) in the pay scale of Rs. 550-1200.

Essential Qualification

At least 2nd Class B.Sc./B.Sc. (Ag), 2nd Class M.Sc./M.Sc. (Ag) in Entomology Or Plant Pathology, with three years' experience in Teaching/Research/Extension Education in Entomology/Plant Pathology Or Ph.D. with one year's experience in the particular subject.

Desirable Qualification

- Aptitude to work in rural areas.
- Field experience of work with farmers in Plant Protection.

4. Assistant Engineer (Electrical)

(One) in the pay scale of Rs. 550-1200.

Essential Qualification

At least Bachelor's degree in Electrical Engineering of a recognised University, preferably with two years experience of electrical work in the Govt./Semi Govt./University or any reputed organisation.

Desirable Qualification

Aptitude to work in rural areas.

5. Subject Matter Specialist (Agriculture Engineering)

(One) in the pay scale of Rs. 550-1200.

Essential Qualification

At least 2nd Class B.Sc. (Ag) in Agricultural Engineering/B. Tech. with three years' experience in Teaching/Research/Extension Education Or M.Tech./M.Sc. (Ag) in Agricultural Engineering with one year's experience in the subject.

Desirable Qualification

Rural background and aptitude to work with farm community.

S.N. Tripathi
Administrative Officer

A.I.U. PUBLICATIONS

	(Rs.)
1. Universities Handbook—1979	150.00
2. Association of Indian Universities—History	50.00
3. Higher Education and Development	30.00
4. University Finance—A statistical profile	50.00
5. Enrolment in Higher Education—A trend analysis	20.00
6. Resource Allocation on Education—Research Studies	20.00
7. Research in Economics of Education—India	10.00

Bibliography of Doctoral Dissertations

8. Social Sciences	50.00
9. Humanities	100.00
10. Physical Sciences	125.00
11. Biological Sciences	100.00

1857-1970

Note : Also available in paperbacks in individual discipline

12. Social Sciences & Humanities—1970-75	150.00
13. Physical Sciences—1970-75	120.00
14. Biological Sciences—1970-75	In Press
15. Social Sciences & Humanities—1975-76	50.00
16. Natural & Applied Sciences—1975-76	90.00
17. Social Sciences & Humanities—1976-77	70.00
18. Natural & Applied Sciences—1976-77	120.00

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19. Management of Examinations	35.00
20. Towards Better Questions	5.00
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23. Monograph on Internal Assessment	6.00
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Undergraduate Level

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31. Chemistry	30.00	38. Commerce	25.00
32. Zoology	25.00	39. Political Science	22.00
33. Botany	20.00	40. Foods & Nutrition	25.00
34. History	15.00	41. Sociology	30.00
35. Geography	15.00	42. English Language and Literature	18.00

Postgraduate Level

43. Mathematics	60.00
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Sports & Physical Education

44. Handbook of Rules & Regulations for Inter-University Tournaments	7.50
45. Gymnastic Exercises for Men	5.00
46. Gymnastic Exercises for Women	5.00

Address enquiries to

Association of Indian Universities

Rouse Avenue, New Delhi-110002

University lews

FORTNIGHTLY CHRONICLE OF HIGHER EDUCATION & RESEARCH NOVEMBER 1, 1979



Students elections in JNU

JAWAHARLAL NEHRU UNIVERSITY

NEW DELHI-110067
Advt. No. 8/ADMN/III/79

Applications are invited from Indian Nationals for the post of Registrar of the University.

Essential

- First or high second class Master's Degree or equivalent qualifications.
- Considerable experience in a responsible position in a University or in an Institution of higher education or in a similar organisation.
- Ability to take organisational charge of meetings and administrative affairs of the University.
- Understanding of finance and accounts problems, aptitude for public relations, intellectual processes of the University and its development.

The Registrar will be required to perform such duties as are and may be specified in the University Act, Statutes, Ordinances, Rules and as may be required from time to time by the Executive Council, the Vice-Chancellor and the Rector.

Scale of Pay

Rs. 1500-60-1800-100-2000 Plus Usual allowances as admissible to the members of staff in Central Universities.

Relaxation in any of the qualifications may be made in exceptional cases in favour of persons of high academic or professional distinction.

Benefits of CP Fund-cum-Gratuity/GP Fund-cum-Pension-cum-Gratuity; Central Government Health Scheme and Leave Travel Concession benefits are admissible as per rules.

Both ways second class (mail) rail fare is payable to the candidates invited to appear for interview from outside Delhi by the shortest route subject to production of rail receipt.

Persons already in employment should route their applications through proper channel.

It will be open to the University to consider the names of suitable candidates who may not have applied or those whose applications are received after the due date.

A higher starting pay may be granted to a highly qualified/experienced candidate.

Applications on plain paper, giving full details of qualifications, age, experience, present pay, scale of pay, etc., should reach the Rector, Jawaharlal Nehru University, New Delhi-110067 latest by the 5th November, 1979.

INDIAN INSTITUTE OF TECHNOLOGY KANPUR RECRUITMENT SECTION

Advertisement No. 31/79

Applications are invited for 3 posts of Assistant Professor/Lecturers in the Nuclear Engineering and Technology

Programme of this Institute. These appointments may either be made full-time in the Programme or jointly with an appropriate Department in the Institute. One post of Lecturer is reserved for Scheduled Caste/Scheduled Tribe candidates. In the event of non-availability of SC/ST candidate the reserved post would be treated as unreserved. The programme is seeking individuals with ability and aptitude for teaching, research and development in any of the following areas of interest:

- Nuclear fusion/Plasma Physics
- Experimental Nuclear/Radio-isotope Techniques
- Reactor control and instrumentation
- Nuclear chemical engineering (Isotope separation/Waste management)
- Reliability and safety.

Scale of Pay

Assistant Professor: Rs. 1200-50-1300-60-1900.

Lecturer: Rs. 700-40-1100-50-1600

Qualifications

Assistant Professor

Doctorate degree with good academic record and at least three years of professional experience outside the work for degrees.

OR

M. Tech. with good academic record and at least seven years of industrial experience outside the work for degrees.

Lecturer

Doctorate degree with a good academic record and adequate research development experience resulting in research papers of good quality.

OR

M. Tech. with good academic record and at least three years of teaching research/industrial experience with good record outside the work done for degrees.

The candidates must have potential for independence in teaching and independent research work as demonstrated by adequate number of publications of good quality in journals of repute outside the candidates own thesis, or equivalent development work done.

The Indian Institute of Technology, Kanpur has well equipped laboratories and central facilities. The Computer Centre has DEC 1090 System and IBM 1800 and also ECIL TDC 316 and a group of experienced programmers. The following central facilities are available: 2 MeV Van deGraff accelerator, 4096 multi-channel analyser and other radiation detection equipment, Liquid nitrogen and liquid helium plants, NMR, EPR, Mass Spectrometer, X-ray Plant, UV and IR Spectrometers, glass blowing shop, crystal growth facility, central instrumentation laboratory, precision machine shop, Advanced Centre for Material Science. The Institute has a well stocked library

with more than 1,50,000 volumes and 1,300 periodicals. The campus facilities include a primary and higher secondary school, a health centre and shopping centre.

The Inter-disciplinary Post-graduate programme in Nuclear Engineering and Technology leading to M. Tech. and Ph. D. degrees has been in existence at IIT Kanpur since July 1974, having been set up to help to meet the country's growing manpower needs for the development of Nuclear Technology. Laboratories for research and teaching in Nuclear Engineering and Technology include, in addition to the Institute's Van de Graff facility, a Nuclear Heat Transfer Laboratory, a Radio-isotope application lab. and various online Data Processing Equipments. Other Institute laboratories, such as those in Materials Science, Electronics, Chemical Technology and Mechanical Engineering, are also available to faculty and students in the Programme.

Posts are permanent and carry retirement-benefits in the shape of CPF Scheme or CPF-cum-Gratuity Scheme or CPF-cum-Pension-cum-Gratuity Scheme as may be opted according to rules. The age of retirement is 60 years. During the first year the appointment will be on probation. Besides pay, posts carry allowances according to the Institute rules, which at present correspond to those admissible to the Central Government employees stationed at Kanpur. Higher initial pay is admissible to exceptionally qualified and deserving candidates. Candidates called for interview will be paid second class railway fare from the place of duty to Kanpur and back, by the shortest route.

Applications from within India must be made on prescribed form obtainable free of charge from the Registrar of the Institute by sending a self-addressed unstamped envelope of 25x10 cm size. Applications should be accompanied by a postal order for Rs. 7.50 (Re. 1.87 for Scheduled Caste/Scheduled Tribe candidates).

Applicants from abroad may apply on plain paper enclosing a complete bio-data and name of three referees from whom reference letters may be obtained.

Applicants who are employed in a Government/Semi-Government organization or Institute, should send their applications through proper channel, else they will be required to produce a 'No Objection' Certificate from their employers at the time of interview.

Candidates selected will be expected to join the Programme by July, 1980 to participate in its activities from the beginning of the first semester.

Application should reach the Registrar, Indian Institute of Technology, IIT Post Office, Kanpur-208016 (India) on or before November 30, 1979.

UNIVERSITY NEWS

Vol. XVII NOVEMBER 1
No. 21 1979

A Fortnightly Chronicle Price
of Higher Education 80 Paise

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Opinions expressed in the articles and reviews are individual and do not necessarily reflect the policies of the Association

Editor : ANJNI KUMA

College and Community

V. Dakshinamurthi*

Education and community

Educational institutions are a part of various institutions of the community contributing to the welfare of the society. In the budget of the Governments, a considerable portion of funds is allotted for education. Educational Institutions are expected to train young men and women of the country to shoulder the responsibility of administering various institutions of the nation. To provide proper training to the students to shoulder such social responsibilities and to make them dutiful citizens who can contribute to the welfare of the society, the educational objectives of school, colleges and universities have to be in tune with the national objectives of development. Our present day educational system cannot achieve anything either towards basic national objectives or National Objectives of Education.

In India, the Government spends Rs. 5000 per student per year to make him a graduate at U.G. level. Day by day, this rate of expenditure increases. But people, including teachers and students report that the standard of education is deteriorating. There may be some truth in it. Community has provided many facilities to educational institutions. What is the contribution of our educational system to the Nation in return for the nation's contribution to education. Answers are well known to us.

Universities and colleges should assume larger and greater roles to reach out to the community and provide a variety of services to it. Their social changes are not isolated exercises through certain programmes and schemes, but should permeate the entire curricular and cocurricular life in the university and colleges. University and college students should be offered larger opportunities for socially useful involvement in civic responsibilities and community participation.

The experiences of developing countries have proved that neither institutional changes nor physical changes and technological inputs alone can achieve the expected developmental objectives. Attitudinal changes among a wide spectrum of people at all levels are an essential pre-requisite for every development effort or for any breakthrough in traditional ways of working and living.

Youth is so depressed that it cannot generate sufficient articulate power, unless helped through education to give definite shape to its own strength.

Our ancient Gurukula system has been praised

*Director of Youth Welfare, Madurai Kamaraj University.

by many scholars on various occasions. The special feature of that system is that the student is considered as an individual. His talents and skills were identified and helped to have development in the fields of his interest in addition to general basic education. Dedication to service, duty consciousness, leadership qualities, etc. were inculcated through that system.

Recently our Prime Minister has commented that "in our country, the educated citizens are a liability to the Nation". In villages, we see youngsters who were very helpful to parents during their school days become a burden to their family, after graduation. Educated men and women of India lose their skills and talents and hesitate to use their hands.

Many of the subjects we teach in colleges and universities have no relevance to the needs of the country.

Experts and various commissions have suggested the following measures for improvement of our educational system.

1. Providing adequately for student welfare.
2. Restructuring the curriculum.
3. Examination Reforms.
4. Education through community service.

Of these, I would like to deal with students services, community services and restructuring the curriculum.

Student services

To train the student, stimulate his intellectual curiosity strengthen his character and enable him to develop into a well balanced and economically productive citizen, a duly co-ordinated and integrated programme of student services is indispensable. All the organised services provided by colleges outside the curriculum which assist in a student's overall development-physical, social and emotional as well as intellectual are called as 'student services.'

Students services are of two kinds. The first will be the services made available to the students at the premises of the college. Next will be the services rendered by students to the community and it is now recognised as community social service.

A student becomes a full-grown citizen only when his personality is developed and he rises to the expectations of society. Each student will be having a few skills and talents and a few weak points. They are to be identified and he is to be helped to have some development in the required fields. Opportunities are to be provided for him in intellectual, physical and spiritual fields for development in a well balanced way. To make a student to have wholesome development of personality a few personal services are to be provided in the campuses during undirected leisure hours which are plenty to an Indian student in addition to class room activities and these services can be arranged.

Various student services are listed below :

List of student service activities

A Suggested by American Council on Education 1958	B Suggested by Education Commi- ssion of India 1964	C Suggested by the Author
1. Selection for Admission	1. Orientation	1. Selection Procedure
2. Registration & Records	2. Health Services	2. Registration & Records
3. Counselling	3. Residential facilities	3. Orientation
4. Health Service	4. Student activities	4. Faculty Advising System
5. Student activities.	5. Financial Aid	5. Counselling
6. Financial Aid		6. Study Techniques & Budgeting Time
7. Placement (Vocational)		7. Health services
8. Financial aid		8. Financial Aid
9. Discipline		9. Hobbies
10. Special Clinics		10. Skill Training Programme
11. Remedial Reading		11. Development of Histrionic talents
12. Study Habits		12. Remedial Services
13. Speech & Hearing		13. Study Circles & Clubs
14. Special Services		14. Student Publications
15. Student orientation		15. Book Banks
16. Foreign Student Programme		16. Talent Bank
17. Religious Activities and Counselling.		17. Guidance Services
		18. Community Services

Student services activities can be developed in colleges without much expenditure if teachers cooperate with us. There is an urgent need to motivate the teachers to come forward to take up such useful services. The main difficulty with us is that we believe that education takes place in colleges only during class hours and that also during the restricted 5 hours per day. Here suitable changes are to be done in our system to involve teachers and students for additional two hours daily. Residential facilities are to be increased. Colleges working hours and vacation systems are to be modified suitably.

Community Social Services

National Services Scheme—Historical Review

"One of the complaints made against the educa-

tional system prevailing in our country today is that it is divorced from the realities of life; it does not give the learner adequate opportunity to know about his environs and to profit from an association with the Community."

As an answer to this complaint, National Service Scheme was started in Indian colleges in 1964 and is being implemented in stages since then.

The idea of instituting a compulsory National Service Scheme of youths has been before the country since independence. The Radhakrishnan Commission had originally envisaged the idea of National Service by youth. In 1958, the late Prime Minister Nehru brought the idea of National Service by students pointedly to the attention of the Chief Ministers and suggested that all young men and women between the age of 19 to 22 should be enlisted for compulsory civilian service for the nation. Prof. K.C. Sajidain, the then Education Secretary was deputed to several countries including Yugoslavia, Czechoslovakia, Germany, Norway, Sweden, England, United States of America, Japan and the Philippines to study this aspect. He had suggested in his report the introduction of National or Social Services on a voluntary basis and the Deshmukh Committee recommended one year of National Service for all young persons passing out of higher secondary schools or Pre-University courses before entering employment. On the basis of such recommendations and on the recommendations of the Education Committee, the Ministry of Education and Youth Services of Government of India, decided to launch National Services Schemes during 1969-70. The main principle envisaged behind this proposal is to develop National Service as an integral part of education.

The goals of National Service

Two sets of objectives have emerged in National Service Scheme. First, the primary objective issues from the task of integrating university education with the hopes and aspirations of the people. Second, the immediate and secondary objective of the scheme is service to the community by students while undergoing instruction in educational institutions. It is expected that the work in pursuance of these objectives will arouse the social conscience of students, imbue them with a sense of social commitment and, in the course of live contact with the people, enable them to put the education they receive to social use.

The scheme provides opportunity to students to involve themselves in Nation building activities while undergoing training in colleges. These positive activities are able to create a sense of participation and commitment in developmental activities of the Nation. Students are able to have an insight into the real condition of the society when they actually participate in rural development activities in villages during camps.

In NSS activities, camping programmes are more effective than regular weekly NSS service. The main reason behind it is that they are able to get the proper guidance of teachers better during camps. Moreover, they have sufficient time to contribute something tangible during camps. Among the varied camp activities, students have been more successful in Shram-

dhan activities. During youth against famine camps, the power of youth was exhibited by way of deepening tanks, desilting and widening canals. During youth against Dirt and Disease, the Shramdhan campaign turned into a Mass Education Programme. Students have educated the public on environmental cleanliness and this has incidentally helped them to educate themselves also.

In introducing Gobar Gas plants, our students have done much work in giving publicity to the scheme. In the case of introducing village industries and cooperatives, we have not been able to have sufficient progress. Mass immunisation programmes, help to school children, science clubs, health check ups, shramdhan activities, street cleaning, collecting donation for flood relief services, etc. blood donation, conducting surveys, soil testing, hospital visits, blind centre visits, and national savings drive are some of the popular services encouraged in many colleges.

Due to unexpected closeness of colleges and change of examination dates, colleges are not able to implement the scheme as effectively as they envisage. As the colleges are not able to maintain continuity of service, the effect of such services becomes less efficacious.

To have continuity of service and systematic follow up of services rendered in adopted villages there must be a permanent youth club in each village. Student youths and non-student youths of the village are to be encouraged to plan their activities and NSS has to provide technical guidance, man power and other helps whenever possible. If we develop youth clubs in our adopted villages and consider them as a service agency, there are chances of having some improvement in maintaining continuity of service.

In some colleges, due to inadequate planning of activities, NSS visits become a picnic or a tamasha. In many reports, we see that students are able to contribute more than 120 hours of service in a year. If these hours are spent in a well-planned, useful way, the result will be more encouraging.

NSS activities have created a link between community, colleges and Government. If Principals take some more interest in the selection of the NSSPOs and supervise their activities, the effect will be still greater.

There is much difference between the NSS volunteers and non NSS student in their attitude even during the strike period.

To develop NSS activities in colleges, the grants are provided to colleges at the rate of Rs. 45 per student per year. This amount is to be utilized for providing refreshments, training expenditure, honorarium to the NSSPOs, purchase of essential equipments and other organisational expenses.

Now NSS is considered as an extension activity. The educational objectives of NSS will be achieved only if NSS activities are linked with the subjects of study. When NSS activities are linked with subjects of study, subject teachers have to play a major role in planning, supervision, implementation and assess-

ment. Because of honorarium given to NSSPOs, they are not able to get the assistance of subject teachers in many colleges. In a few colleges, NSSPOs do not like to involve subject teachers due to personal reasons.

NSS is an activity of the college. Every college is expected to involve as many subject teachers as possible to develop subject oriented community service.

National Service Scheme is a movement, a method and a programme to effectively involve the teachers and students in making education socially relevant and using the system to transform the society. This process seeks to sensitize the members of the college community, who are a privileged group to contribute their mite to the good of the society.

The National Service Scheme has opened new vistas and has offered unique opportunity for the institutions of higher learning to become instruments of change and development. In colleges, where the NSS is considered as an academic component of the college, the effect is realised. Colleges, where it is considered as a one-man show, and an extra curricular activity, only reports and documents swell.

NSS is to be utilized as a lever for changing the character of institutions of higher learning and instrument for social transformation.

Community Social Service

The main objective of NSS is 'Education through Community Service'. Name of the service is mentioned as community service. Community service is the main subject of consideration. Now at the experimental stage, the system will be called National Service Scheme. After incorporating it into the main educational system, the service will be called Community Social Service.

Difference between NSS and CSS

When a social service is conducted in a college during out of class hours as a means of education through Community Service and as a co-curricular activity, according to the guidelines of National Service Scheme, the activity is called NSS.

If the same activity is conducted as curricular activity linked with subjects and coming under assessment, it is called as CSS.

CSS is the final goal of NSS. The improved system of NSS will be CSS. NSS and CSS are expected to pave the way for restructuring the curriculum. This means incorporating work experience and service in subjects of study.

Adult Education—NAEP

To educate the community and to involve it meaningfully in national development, National Adult Education Programme is being implemented. Colleges have a major role to play in this regard. Experiments so far conducted and other piecemeal efforts undertaken in the field of Adult Education during the past have failed due to inadequate planning, lack of supervision, lack of resources and absence of sustained efforts. Our colleges have the experience in launch-

ing NSS and various camps. In NSS also, Adult Education is one among the many important activities. There is much difference in between the activities of NSS and NAEP. NSS activities are conducted during working days of colleges at evening hours. When colleges are closed for holidays, there are no efforts to have continuity of service.

Here in NAEP classes are to be conducted regularly during nights. Bringing adults to the class room and teaching what will be useful to them, in a way they relish are very difficult tasks. Our students and teachers are expected to teach experienced Adults, who have their own social status. There are no set examples regarding the methods of teaching to be adopted in Adult Education. Regarding curriculum also, we have to design a flexible one. This programme is diversified and flexible in all respects. During the literacy campaign organised by the Department of Youth Welfare, Madurai Kamaraj University, textbooks were prepared in note books for each individual according to his need and aspirations. 'Each one teach one' method was successful in some spheres.

Each college is expected to have 10 Adult Education centres. Local students are to be selected for teaching. To have proper planning and supervision, a non teacher is to be appointed as a part time supervisor. Basic supervisory responsibility should be shared among a group of teachers. Among them, one will be designated as coordinator of NAEP. He will be paid no honorarium. There must be proper coordination between NSS and NAEP. As NSS Officers have already many responsibilities connected with NSS, this NAEP coordinator will be a different teacher. NSS Advisory Committee will be the Advisory Body for NAEP also. UGC provides a grant of Rs. 14,000 for 10 centres.

NAEP is a National programme, a very difficult area of service. Sufficient care is to be taken in all respects.

Relevance of curriculum to community needs

A review of the existing system

At present, the contents of the courses and the way in which they are being taught have little relationship to life as it is lived by many of our countrymen. Worse still the courses are not related even to the lives and future of the students themselves.

Of late, the role of Universities and Colleges has been visualised as that of a catalyst in a society, and as such, they should undertake the tasks of promoting or bringing about social change and development. Universities are expected to pull their weight and help accelerate the process of social transformation. This is linked with rediscovery of knowledge as a potent tool for transformation of a social reality.

The changes envisaged will call for the institution of a new scale of values to judge the merits of faculty members.

Work experience

"Introduction of work experience which includes manual work, productive experience, etc., and social

service as an integral part of general education at more or less all levels of education", is one among the seven main features of the report of the Education Commission. So this must be one of the main points for consideration for restructuring the curriculum.

When incorporating work experience and Community service in the curriculum, suitable method of evaluation is to be devised for assessing the task performance of teachers, students, organisation and the scheme. Such a system of evaluation will pave the way for modernisation of curriculum and method of teaching.

Three important sections

Any curriculum of study at UG level may be divided into three sections. First section may contain theories and concepts which are abstract and are to provide general principles for meaningfully understanding a phenomenon. Second section may contain practicals and experiments for science subjects and Project work for humanities. Project works will consist of observations, discussions, research studies, investigations, tutorials, field study etc. The third important section for all the subjects will be subject-oriented community social service or service oriented subjectwise service projects.

During examinations, 50 to 60 percent of marks may be allotted to theory and the rest may be divided in between the other two sections.

Many of the academicians have a view that Social Services are inferior to theory component of Education. Unless we give equal importance to all the three components, restructuring becomes meaningless.

Various aspects of restructuring the curriculum

(i) Reconstruction of subject study

The first step is that curriculum in almost all the courses of groups of courses should be constructed with a community or social service and it should be made obligatory for the students to opt for one such group of courses.

(ii) Study service scheme

Community services are to be utilized to apply and test the ideas and training provided in the class room in the rural and urban fields. These operations will enable students to reevaluate their learning experiences while, at the same time community will benefit in the resolution of its problems. This type of education is called as Study Service Scheme. Study Service Scheme would be a dynamic programme of action, implying at once a basic change in the character of education and an improvement of the social conditions. It is very important to keep this two-way benefit relationship in mind.

(iii) Cooperative teaching

By adopting a rural or an urban area and applying relevant knowledge from different disciplines to the solution of the community, cooperative or

interdisciplinary teaching can be encouraged. In the field of science and technology the need to introduce inter-disciplinary teaching is widely recognized. Such a kind of inter disciplinary teaching can be evolved in humanities also.

(iv) Bureau of extension work

The net result of restructuring the curriculum will lead to basic modification of study assignments. Class room education, supplemented by laboratory experiments/project works will have to go hand in hand with field activities. For this purpose each college will have to select a segment of the social setting for field operations. Similarly, to be able to create an appropriate climate for community biased education, provide liaison between college departments and sections of the community, and finally, oversee persecution or community social service activities, as such, there may be a Bureau of Extension work and community services in each college. In this bureau a set of thinkers from all the faculties of the college and a few members of the society will sit together to plan the activities. This bureau will be only a planning body. Services will be implemented and studied through subject departments.

Reasons for the delay in restructuring the curriculum

(i) Those who have discharged the limited function of didactic teaching for a number of decades in the institutions of higher learning and who visualise the dissemination of knowledge as the primary task of the university have been quite opposed to any change.

(ii) The matter of making education socially meaningful and relevant has lately engaged the attention of the Central and State Governments and the University Grants Commission. However, inspite of the concern expressed about the dysfunctional character of higher education, steps have not been taken by most of the universities to introduce new courses or to grapple with the issue of restructuring old courses and thereby establish linkage between social and economic developmental goals of the community and the educational goals of the university.

(iii) One reason why it has not been possible to regulate higher education in terms of a consciously articulated philosophy of development, is that the legacy of the colonial past is too strong to permit radical departures. As is generally known, colonial rulers in India have used education for two broad purposes. One, create a cultural elite in the country such as could be immune to the pressure of native needs and two, to bring into existence a human resources pool which could be utilised for exploitation of the masses.

(iv) The principal malady has been the built-up puritanical academism in the universities. The spate of "reforms" in the instructional practices, textual materials and evaluation devices has left this character altogether undisturbed.

(v) The piecemeal approaches to improve instruction and evaluation, initiated by the UGC and Universities at different times, are totally sterile. Repre-

sending as they do peripheral attempts to reform a thoroughly morbid system, they will not produce any impact as long as the old structure remains qualitatively intact.

(vi) The Boards of studies seem to have concerned themselves with the addition or deletion of a few books or topics, and have not shown serious concern about the restructuring of a course from the functional point of view. Thus it is quite likely that innovative projects would tend to be thwarted like the one under reference because they would require more time, efforts and even active participation by teachers concerned. Psychologists tell us that human beings tend to economise their efforts and resist change to the maximum extent possible. It is therefore suggested that the active leadership may have to be assumed by grant giving bodies at the state and central levels to initiate new projects by putting conditions on promotions and appointments, institution of new courses, and establishment of new colleges.

(vii) The view that higher education is the elite and for the elite.

(viii) Resistance to change by vested interests.

Restructuring leads to :

(i) Suitable blending of didactic teaching with practical work in the community on an interdisciplinary basis.

(ii) Making teaching of subjects more meaningful and relevant and facilitating change and development.

(iii) Teaching will become more practical and environment oriented.

(iv) The purely textual lecture method of instruction will cease to have even limited value.

(v) Laboratories and facilities available in the college will be put into use for the social need.

(vi) Community service will become a method of teaching.

(vii) Incorporation of work experience with subjects of study.

(viii) Integration of knowledge, experience and service.

(ix) Application of knowledge to social needs of the country.

(x) Understanding topics and subject through observation and application.

(xi) Contribution of educational system towards the benefit of the masses.

(xii) Institutions of higher learning will become instruments of change and development.

(xiii) Involvement of teachers and students in community action programmes.

(xiv) Changing the total outlook of administration and academic bodies favourable to social service.

(xv) Introducing a radical change in the minds of the educated with a commitment for a thorough going national reconstruction.

Few experiments and initiatives

(i) The University of Rajasthan has set up an

Interdisciplinary Centre for Research and Training in Social Development to link up education and development as a followup of NSS programme already undertaken.

(ii) The faculty of humanities of the University of Rajasthan has approved a proposal for practical work in the subject of philosophy.

(iii) Madras University has introduced community social service at PG and UG levels with internal assessment as a part of Part III.

(iv) Madurai Kamaraj University has introduced integrated community service and other cocurricular activities as part IV with an assessment system of passing minimum 35% at UG level.

(v) Madurai Kamaraj University Academic Council has approved 14 restructured syllabi in rural biased courses. In these courses project work/practical and community service components were incorporated.

(vi) Bangalore University has introduced NSS as a paper. This is not a step in the right direction. CSS is expected to be incorporated in subjects of study not to be made as another theoretical paper.

(vii) NSS was introduced as a compulsory course of 3 credits at undergraduate level in Pant Nagar Agricultural University.

(viii) Sri Parasakthi College, Courtallam has incorporated community service with the main subject at UG level Subject level committees were nominated to implement the programmes.

(ix) Fatima College, Sri Parasakthi College and S. Vellaichamy Nadar College have come forward to implement pilot projects in restructured curriculum.

A few Don'ts

(i) NSS/CSS as additional paper

Introducing Social Service or Rural Development as a compulsory or additional paper will not meet the requirements of restructuring the courses. The idea is to recast the entire teaching programme in such a way that a portion of the teaching time of different courses is spent on field projects and community service in a collaborative basis.

(ii) NSS or CSS as a topic for study

There is a view that NSS/CSS may be introduced as a topic in all subjects or as an additional subject. This however, is not what is aimed at. The integration of NSS/CSS with the curriculum implies that the curriculum in each subject would be so structured as to also serve the needs of a particular community or region which is experiencing planned or incidental change and development. The idea is to help the academic community make an effort to identify ways in which the resources of NSS/CSS may be utilised for improving and supplementing didactic teaching with field projects and work experience.

The question therefore is not of introducing NSS/CSS either as an optional or as a compulsory additional paper for students. It is the question of mak-

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Education and New Mathematics

During the past thirty years of our independence every one, right from the Prime Minister of the country to the common man, has often expressed concern about the type of education being imparted in our country and time and again, efforts have been made to evolve a suitable system. But it is very unfortunate, that the efforts have not yielded the desired results. Now the time has come for every one of us in the field of education, to sit up and think seriously, as to what we can do in the matter. Going through the historical aspect of our education is a futile exercise inasmuch as it will lead us nowhere. So, let us restrict ourselves to the discussion of the present state of things, which has been with us since 1972.

In 1972, a new syllabus was introduced with all the fan fare, with an avowed objective of enhancing the standard of education. Soon, the syllabus came under ire and fire and surprisingly those who had contributed to fan fare, themselves took up cudgels against it, as the number of failures at the SSC examinations, began to mount year after year. Soon the protagonists and antagonists of the new syllabus, as a result of sharp polarization, engaged in battles of wits, setting an atmosphere of uncertainty in the air as to the future of the syllabus and leaving the people, more especially the students, in a haze. Casual utterances of the people in authority added to the confusion. The same situation prevails even today and nothing can be said as to how long the situation will continue.

However, it is better to look to the present syllabus with an open mind. The new syllabus prescribes as many as six compulsory subjects including Mathematics, which was an optional subject earlier. As a matter of fact, this was a necessary step and in the right direction too. It is this step in particular that was resented as it affected the results of the SSC examination, while the other subjects were taken with ease. The whole thing now boils down to one point, i.e. the new syllabus is acceptable with the exception of mathematics. Let us examine the reasons for this opposition to mathematics in particular.

Does it mean that the people are opposed to the advent of scientific civilization, which has led man to a higher plane of civilization? This is not the case because people are willingly adapting themselves to this civilization. They also want a substantial contribution to be made by their sons and daughters for accelerating the development of science and technology. This is evident from the ever-increasing demand made on science and technological institutions for admission to the courses. They are also fully aware of the fact that the success of their children

in these courses mainly depends on their proficiency in mathematics which is the mother of all these sciences. So, we will have to search for the reasons elsewhere.

People do not deny the desirability of teaching mathematics to the extent of acquainting the children with the mechanics of mathematics and the mechanical process of building up skills for the purpose of manipulating numbers, sans the understanding of the underlying abstract principles, which need thinking. In other words, people want the traditional mathematics and they are averse to the evolution of mathematics, which is keeping pace with the requirements of the marching time. This has been the crux of the whole problem.

To tackle this problem, one will have to look into the various aspects of the evolution and its present state. Evolution is a phenomenon caused by actions and reactions of various forces at work and to trace the course of such actions and reaction is not within the scope of this article. Therefore, accepting the things as they are, we will have to proceed on our course. The main tools that are used in processing the students in this subject are the text-books and the teacher is the architect. A good architect uses whatever tool he is provided with skillfully and to his advantage and gives the desired shape and size to the material irrespective of efforts he is required to put forth in using his tools and making the raw material suitable for the purpose.

This rules out the unnecessary criticism being levelled against the quality of text-books. It may not be out of place to cite the example of Willy Kuhne, who, in the middle of the last century, with the aid of nothing more than a microscope and a prism, determined, what today we would call, the action spectrum of chlorophyll. This action spectrum is now measured, rather laboriously, with complex optical instruments. So, the tools have a limited role to play in the process, while the architect, who is emotionally involved in his objective and toils unceasingly, has a major role.

This brings us to the architect, the teacher. Is he a good architect, equipped with the necessary know-how of his occupation, emotionally involved in his objective, charged with zeal and having capacity to toil unceasingly? If he lacks, naturally, he will produce an imperfect product, in the form of a student incapable of understanding and assimilating the implications of the subject and awaiting only to be fed mechanically. So, the teacher is all important in building either interest or aversion for a subject, in the taught. As a matter of fact, the student should be encouraged to acquire a systematic knowledge of facts and theories, of objects, of procedures, and of principles. He should be exercised to a certain level

of skills in the use of such a knowledge and in the acquisition of more of the kind. Such training will not fail to generate genuine interest in the subject. For this purpose, the teacher himself should have been the product of such training. It is observed that many of the teachers, who were infused with creative enthusiasm as adolescents, (as their records of achievements show), lost it during their graduate studies and at the time of their work as teachers. When such imagination and enthusiasm were most needed, it seemed that they no longer had them. May be, that they were subjected to studies that allowed no outlet for creative imagination which dulled their vision and as a result they were prepared poorly for mature contribution.

The teacher should be equipped with the necessary know-how and every opportunity should be given to him for developing himself in the knowledge of the subject, the objectives of teaching, methodology techniques etc. and such a knowledge will enable the teacher, not only to do full justice to his profession, but also will instil in him enthusiasm, kindle his imagination and steer him towards creative and meaningful work, which ultimately will give him complete job satisfaction.

Since there are many limitations which impede the efforts of the colleges of education, in equipping the teachers with adequate knowledge of know-how of the profession, the teachers will have to lean more on such literature as would give them the knowledge, and set a programme of self-development at their individual level. Unfortunately, there was no such literature available until the publication of "Mathematics Education", a research work of Mr C.V. Bhimasankaram, a young scholar with a creative mind. The book is the first of its kind and I feel that it will prove a valuable guide and companion to all the mathematics teachers of all levels. The book has kindled a hope in us assuring us that the younger generation has been seized of the problems of education and many more such publications in other subjects too will follow and thereby, rejuvenate the falling standard of both the teachers and the taught.

At the same time, it is imperative that the present syllabus be given a fair trial for a responsible time. Teachers endowed with adequate capacities should be able to make it a grand success by achieving the objectives set by the framers of the syllabus. □

Courtesy : The Free Press Journal

College and Community

(Continued from page 554)

ing NSS/CSS work experience an integral part of each subject and thereby of the educational system. This is what is meant by social service or community orientation to education.

(iii) Extension Department for NSS/CSS

It will be very easy for the universities and colleges to establish extension departments for NSS and CSS. Establishment of such departments and expecting them to shoulder the responsibility of such activities will defeat the purpose. The services are to be incorporated into each subject and the subject teachers are expected to involve themselves in field projects. Then only the work experience and the community service experience can become an integral part of the educational mainstream.

Teacher attitude towards extension activities

Activities NSS, CSS, Adult Education, Planning Forum, etc, are considered as extension activities. Success of the activities entirely depends upon the leadership provided by the teacher. For NSS officers an amount of Rs. 75 is provided as monthly honorarium. Because of this monetary incentives sometimes due to pressures and favouritism, right types of persons are not selected to shoulder the responsibilities. The dedicated teachers who have contributed much to the social services through the colleges are also not able to get chances sometimes.

On some occasions the schemes are considered as a source of income instead of a scheme of development. Some of us are yet to cultivate the attitude of using the grants for right purpose. When compared to the enthusiasm and involvement of the students in the activities of these schemes, the involvement of teachers is not encouraging.

Few points for discussion

1. How can education be made an effective instrument to serve or promote national objectives of development in different regions?
2. Should education continue to pursue its goals in isolation from the developmental goals of the nation as it happens now?
3. How can the teaching of subjects be made more practical and applied and how can the performance of students and teachers be evaluated?
4. Should those subjects which have rather marginal or no relevance to the community or developmental goals, be continued, and started in new departments, colleges and universities? How can they be regrouped with other optional subjects which are more relevant to community needs and problems in order to make the teaching meaningful?
5. How should inter-disciplinary efforts be geared to solving specific developmental and community problems in different regions and so on? And more importantly should the professions like education, medicine, engineering, law etc., which involve huge public investments be allowed to develop in isolation from (and even at cross purposes to) the developmental goals of the country or of the regions?
6. What are the steps to be taken by colleges to implement NSS, CSS and Adult Education more effectively?
7. What are the steps to be taken at the college level to develop student services?
8. What should be the contribution of colleges for restructuring the curriculum?
9. Suggestion for a plan action at the college level. □

Need for integration of adult education with educational system

Shri A.J. Kidwai, Vice-Chancellor of the Jamia Millia Islamia inaugurated the annual conference of the Indian Adult Education Association held recently at Amritsar. In his address, Shri Kidwai urged the scientists of the CSIR, ICAR and ICMR to participate in the National Adult Education Programme with their network of research stations and experimental farms in the countryside as well as their large force of extension workers. The conference was attended by 418 delegates from 23 States and Union Territories. Dr. Malcolm S. Adiseshiah presided over the conference and the valedictory address was delivered by Mrs. Satyavani Muthu, Union Minister of State for Education and Social Welfare.

The conference called for a restructured education system to

partment of Economics of Magadh University inaugurated a two-day seminar on agricultural and industrial development at Patna organised under the auspices of the L.N. Mishra Institute of Economic Development and Social Change. In his address, Dr. Ganguly stressed the need for formulating a sound policy in order to accelerate the tempo of balanced agricultural and industrial development of the Indian economy. He was of the opinion that regional disparity should be reduced and entrepreneurship orientation should be developed among the youth so as to remove its backwardness. Infrastructure facilities, he added, should be developed quickly to augment both agricultural and industrial production.

Mr. I.N. Thakur, Director of the Institute, said that unless population growth was checked, no amount of planning could alleviate the sufferings of the

Chancellors to take steps for maintaining the sanctity of examinations by curbing use of unfair means in the examinations.

Dr. Kidwai said that teaching work should be held regularly and the present teaching schedule of 180 days must be maintained. The meeting also discussed the law and order situation in the universities and pleaded for adequate security arrangements to defeat the games of anti-social elements.

Besides the Deputy Chairman of the Inter-University Board, Dr. S.P. Sinha, the meeting was attended by Dr. K.N. Prasad, Vice-Chancellor of Patna University, Dr. Gaya Prasad Singh, Vice-Chancellor of Bhagalpur University, Dr. R.K. Sharma, Vice-Chancellor of K.S. Sanskrit University and Shri S.K. Srivastava, Education Commissioner.

Priority for higher legal education

While delivering Dr. P. Subbarayan Memorial Lecture, the Chief Justice of the Madras High Court, Mr T. Ramaprasad Rao, emphasised that the universities should open research centres in law so that graduates coming out of the legal institutions would get opportunities to continue their studies. Legal education, he said, should equip the lawyer in such a manner that he would be in a position to analyse for himself the modus operandi which he should adopt for the emancipation of society and the country. In this sense, a bond should be created between law and the social sciences.

The Chief Justice said that for providing continuing legal education, it was necessary to provide for courses in judicial studies, refresher courses for legal practitioners' courses in new legislation, specialist courses in different branches of law and in interdisciplinary courses. For achieving this object, it was necessary to set up an institute of professional legal studies for coordination, organisation and stimulation. He suggested that refresher courses for judicial officers should also be organised in consultation with the District Bar Associations and

CAMPUS NEWS

provide for integrating adult education into the overall national educational system and national development plan. It underlined the need for transforming the NAEP into a people's movement so that its benefits could reach the poorest strata of society. While there was much more generous and continued support by the State for the NAEP at the field level, there was also need for greater coordination and integration of the efforts of various agencies of the Government and voluntary organisations involved in the education of adults. It was therefore felt that instead of creating parallel or new structures, there should be an attempt to transform the existing ones for more effective implementation of NAEP.

Seminar on agricultural and industrial development

Dr. B. Ganguly, Professor and Head of the Post-graduate De-

partment of Economics of Magadh University inaugurated a two-day seminar on agricultural and industrial development at Patna organised under the auspices of the L.N. Mishra Institute of Economic Development and Social Change. In his address, Dr. Ganguly stressed the need for formulating a sound policy in order to accelerate the tempo of balanced agricultural and industrial development of the Indian economy. He was of the opinion that regional disparity should be reduced and entrepreneurship orientation should be developed among the youth so as to remove its backwardness. Infrastructure facilities, he added, should be developed quickly to augment both agricultural and industrial production.

Mr. I.N. Thakur, Director of the Institute, said that unless population growth was checked, no amount of planning could alleviate the sufferings of the general masses of the people. The various topics discussed at the conference included, among others, (i) Agricultural development of India during plan period; (ii) Industrial development of India during plan period; and (iii) Levels of national income, employment and price.

Bihar VCs asked to regularise academic sessions

The Chancellor of the universities in Bihar, Dr A.R. Kidwai, has requested all the Vice-Chancellors to initiate all possible steps for regularising the academic sessions of the universities. He expressed deep concern at the irregular academic sessions and untimely examinations in different universities in the State. He maintained that the present state of affairs in the universities must be improved and all pending examinations be held by the end of next year. He urged the Vice-

the voluntary associations in the area.

The universities should offer new courses in legal studies instead of pedantic and pedagogical lectures on well known subjects and research centres for higher legal studies should also be set up.

Training course in agricultural financing

The Department of Extension Education of the Punjab Agricultural University organised a 6-day training course in agricultural financing for the technical officers of the Indian Overseas Bank. Dr. Amrik Singh Cheema, Vice-Chancellor of the university, who inaugurated the course, said that no agricultural development programme could prove a success unless the farmers were given timely and adequate financial assistance. He added that commercial banks involved in agricultural production could play a vital role in boosting the agricultural production by providing sufficient credit facilities to the farmers especially the weaker section of the farming community.

A large number of technical officers of the bank from Punjab, Haryana, Himachal Pradesh, Uttar Pradesh and Delhi participated in the course.

Orientation training programme at NEHU

The North-Eastern Hill University organised a week-long orientation training programme for the NSS Programme Officers of the affiliated colleges with a view to making them aware of the problems of the region. Inaugurating the programme, the Meghalaya Minister for Tourism and Community Development commended the NSS wing of the university for its dynamic character for infusing in the hearts of the students the sense of dignity of labour and leadership. He emphasised that book learning and manual labour should go hand in hand.

Dr. A. K. Dhan, Vice-Chancellor of the University, said

that the students were the most powerful agents to work for rural reconstruction programme and that the teachers should know how to direct them to that constructive activities.

Science for masses

Delivering the Osmania University golden jubilee lecture on Science, Technology and the People, Prof. S. Bhagavantam, an eminent Physicist and President, Committee on Science and Technology, for developing countries, called for the promotions and practice of science and technology in India keeping in view the massive human resources of the country. The first step, he said, for using science and technology for the benefit of the masses was for their application for producing consumer goods in a manner that would find people gainful employment and a more equitable distribution of income. He added that there was need for a conscious drive towards decentralising large scale machine production of consumer goods.

Prof. Bhagavantam called for radical reorganisation of science and technology to meet the basic needs of the people like food, shelter, clothing, health and education. He cautioned the Indian scientists and technologists against depriving the people of their efficiency of utilising their God-given faculties of thinking, walking and writing by over-use of scientific innovations.

Prof. G. Ram Reddy, Vice-Chancellor of the university underlined the urgent need to bridge the tremendous gap between scientific discovery and application for the development of the State. He pleaded for the setting up of a counterpart to the Department of Science and Technology in Andhra Pradesh to coordinate the efforts of scientists and technologists to develop the potentialities of the State.

Farm Varsities advised to help farmers

The Union Government has asked all the agricultural uni-

versities in the country to mobilise their staff and students for helping farmers hit by severe drought conditions in order to help them in respect of plant production, post-harvest operations, soil health use of irrigation resources and soil moisture and planning of land use for Rabi crops.

The Union Agriculture Ministry has also set up Crop Weather Watch Group to suggest steps to be taken for solving the problems caused by complete failure of rains. Contingency plans and community nurseries suggested by the group have gone a long way towards reducing production losses and helping paddy growers. It has emphasised use of dryland technology and sowing of such crops which are photo-intensive and drought resistant. Such varieties are available in rice, jowar, bajra, pulses, mustard, groundnut, castor and cotton sunflower.

Special status for farm varsities urged

The executive committee of the Federation of the Indian Agricultural Universities Association at its meeting held recently at the Haryana Agricultural University, Hissar, has urged that in view of the technical and professional nature of the education being imparted in agricultural universities, they should be treated as technological universities on par with other technical institutions like IITs and ICMR. It also demanded the setting up of an agricultural universities grants commission on the lines of UGC.

The committee urged the Union Agriculture Ministry to direct all State Governments to introduce a process of democratisation in all agricultural universities so that elected representative of teachers could find a place in the governing and academic councils of these universities. It further demanded the adoption of uniform acts and conduct rules for teachers in all agricultural universities.

Need to check national brain drain

The All India Conference of Society of Bio-Chemists held recently at Lucknow expressed concern over the national brain drain and called for creation of a congenial atmosphere to check the exodus of young scientists to foreign countries to seek better career. It was felt that the present generation of scientists had set new and fashionable trends in bio-chemicals research which compared well with the research done anywhere in the world. But the creative bloom remained only for a short period and then followed an inevitable hunt for post-doctoral fellowships abroad seeking the reflected glory of being carried in the mainstream of competitive research practised in the developed countries. It was therefore felt at the conference that a congenial atmosphere had to be created to get them integrated effectively into our national framework.

Workshop on airborne surveys at NGRI

Dr. Hari Narain, Vice-Chancellor of Banaras Hindu University, inaugurated a workshop on Airborne Surveys organised by the National Geophysical Research Institute at Hyderabad. He commended the project carried out at the Institute and said that there was an urgent need for coordinated efforts by various agencies involved in mineral exploration and exploitation in the country to formulate plans for rapid coverage for the whole country and its vast continental shelf.

Prof. P.R. Pisharoty, Prof. Emeritus, Physical Research Laboratory, Ahmedabad, advocated the use of passive and active sensors with microwaves and their application in soil moisture studies related to agriculture. He was of the opinion that the application of microwaves had vast potential for agriculture.

The workshop agreed for a phased programme of systematic coverage of the whole country with aeromagnetics.

INSA awards

The Indian National Science Academy has announced its various awards to scientists.

The Jagdish Chandra Bose Medal for 1980 was awarded to Dr. D.P. Burman, Professor and Head of the Department of Biochemistry, Institute of Medical Sciences, BHU, for his outstanding contribution to intermediary metabolism and molecular biology.

The C.V. Raman Medal for 1979 went to Dr. Salim Moizuddin Abdul Ali for having placed India on the world map of ornithology.

Dr. V.G. Jhingran, former Director of Central Inland Fisheries Research Institute, got the Chandrakala Hora Memorial Medal for 1980 in recognition of his scientific contribution to the development of fisheries in India.

The D.N. Wadia Medal for 1980 was given to Dr. J.B. Auden, for his outstanding contribution in the field of earth sciences.

Dr. A.G. Datta of the Indian Institute of Experimental Medicine, Calcutta, won the Basambar Nath Chopra Memorial Lecture-ship Award for his contribution to biological oxidation mechanism.

The S.H. Zaheer Medal went to Dr. D.P. Antia for his contribution in the field of non-ferrous metal technology particularly in the fabrication of aluminium and zinc alloys.

Prof. C.N.R. Rao of the Indian Institute of Science, Bangalore, was given the S.N. Bose Medal for his contribution in the field of solid state science and spectroscopy and molecular science.

The Meghnad Saha Medal for 1978 was won by Dr. D. S. Kothari for his eminence in the field of Physics.

Noble Prize for medicine announced

The Karolinska Institute, Stockholm, has awarded the 1979 Noble Prize for Medicine Physiology jointly to Prof. Allan M. Cormack of the Tufts University, Medford, Massachusetts, USA, and Dr. Godfrey Newbold Houns-

field of the Medical System Department of Central Research Laboratories, UK, for their outstanding contribution to the development of tomography with computer assistance.

The coveted prize carries a cash award of \$191,000 and is awarded for the development of computer-assisted tomography which allows doctors to view the inside of the human body in three dimensions. Its successes have been most spectacular in searches for tumours and in investigating diseases of the brain and nervous system.

Need for restructuring of education stressed

Prof. V. Ramalingaswami, Director-General of Indian Council of Medical Research, New Delhi, inaugurated a seminar on Science, Technology and Education for Prosperity organised by the Andhra Pradesh Akademi of Science at Hyderabad recently. In his address, Prof. Ramalingaswami stressed the need for restructuring primary, secondary and tertiary levels of education in developing countries to ensure that modern science and technology were integrated with their surrounding culture so that their social and human values are not trampled upon in the process.

Stressing the importance of basic research, Prof. Ramalingaswami said that it was not correct to say that basic research was a luxury for the poor nations of the developing world. He emphasised that we needed both basic and applied research in balance for the development of indigenous capability and self reliance in the solution of local problems in technology. He observed that even a given developmental pattern might require a variety of technologies ranging from labour-intensive to capital-intensive ones. These are not mutually exclusive nor are they in conflict and aimed to promote growth and industrialisation.

NCERT panel on moral education

The National Council of Educational Research and Training, in

collaboration with the Sri Aurobindo Centre, organised a conference of educationists on the integration of moral values in the educational curriculum. Inaugurating the conference, Dr. Karan Singh, Union Education Minister, said that the NCERT had set up a committee to suggest steps for the integration of moral education in the curriculum. He expressed concern at the increasing gap between science and moral values and said that if expansion of knowledge was to serve its real purpose, it should have a strong base of moral values. The Minister was of the view that moral education was not inhibited by secularism.

Dr. S.K. Mitra, Director of NCERT, recalled that moral instruction was excluded from educational courses during the British raj and added that any education which did not instill a burning zeal for freedom in people was not worth the name.

Commonwealth scholarship awards

Under the Commonwealth Scholarship and Fellowship Plan, the Overseas Development Administration, London, has awarded scholarships to 272 men and women including 30 Indian students to enable them to undertake post-graduate studies at British universities and top research institutes. These scholarships would enable the students to take courses and pursue research related to the need of their own countries and would cover a wide range of subjects from naval architecture and telecommunications to molecular biology and mother and child health care. The tuition fees and living costs of the scholarship holders, while they are in Britain, would be paid by the Commonwealth Scholarship Commission from funds provided by the British Government.

Education through community service

Addressing the student leaders of the newly started NSS unit at the Gandhigram Rural University, Major S. Venkataraman, Deputy

Programme Adviser, NSS Zonal Centre, Madras, said that any system of education which did not care for the people around the institutions of higher learning could not be realistic and would certainly be counter-productive. He exhorted the students to realise the value of education that was being imparted through community service and opined that there were vast potentialities for the students of this pioneering institution and it should provide a model for the other units in the country. The close link forged between this institution and the villages in the neighbourhood offered a great opportunity for the students to dedicate themselves to the cause of the nation.

Government to launch population education project

Inaugurating a regional workshop on innovative structures and approaches to population education jointly organised by the UNESCO and the NCERT, Dr. J.D. Sethi, Member, Planning Commission, said that the Union Education Ministry proposed to introduce population education project in schools in the country. It would cover 93 million school students and 45 million out-of-school children in the next four years.

Dr. Sethi emphasised that education for population control should form part of the economic development process and the children be made aware of the magnitude of the problem. They should be educated to recognise that a small family was not only proper but highly desirable.

Refresher course for history teachers

Prof. R.S. Sharma of the Department of History of Delhi University inaugurated a refresher course for undergraduate and postgraduate teachers at the Bihar University. The course was sponsored by the University Grants Commission and was attended by a large number of history teachers from different universities in the country.

It was emphasised that the latest methods of research in teaching and writing of history be adopted at the university level and the speakers who spoke on the various aspects of Indian and non-Indian history gave a call to shun communal and imperial bias in the writing and teaching of history.

Roorkee organises conference on computer application

The Civil Engineering Department of Roorkee University, in collaboration with the Institution of Engineers (India), organised a three day international conference on computer application. During the course of deliberations, the conference covered current research on computer applications and necessary changes in future applications influenced by latest developments in numerical methods of technology.

The conference was attended by 200 delegates from various parts of the country and about 50 noted experts in various fields from US, UK, Canada, Japan, Australia and Netherlands. An exhibition of scientific equipment used in civil engineering and applied to computers was also organised on the occasion.

Health Varsity at Mysore proposed

The Karnataka Government proposes to set up a health university in the State and it is likely to be located at Mysore. The proposal to this effect has been submitted to the Union Government and a Bill to this effect would be introduced in the next session of the Legislative Assembly.

All medical, dental, pharmacy and nursing colleges would be brought under the jurisdiction of the proposed university. Though the university would confine itself to the allopathic system of medicine initially, it would also extend to the Indian system as well.

Seminar on linguistics at Patna

A three-day seminar on Indian traditions in linguistics was held

at the A.N. Sinha Institute of Social Studies at Patna under the joint auspices of the International School of Dravidian Linguistics and the Department of English of Patna University. The seminar attempted to identify the diverse and long established traditions of linguistics in India and sought to assess their value to modern linguistic techniques and theories, their analytical procedure and practices. The scholars of Dravidian and Indo-Aryan languages participated in the deliberations of the seminar.

Osmania to restructure engineering courses

The Employment Bureau and the Applied Psychology Division of the Osmania University have been jointly working out a research project 'Subject identification in local industry'. This study would identify new areas of skills and make projections of required skills specialisations being introduced by the local industries and help the university engineering college to restructure the courses keeping in view the needs of the job market. The study would take into account the suggestions of the industries on the workload ratio in the degree courses and provide the feedback

to the engineering department in order to restructure courses and modify teaching methods.

Agricultural Varsities convention at HAU

The tenth convention of the Indian Agricultural Universities Association will be held at the Haryana Agricultural University from November 5, 1979. The convention will be inaugurated by the Haryana Governor, Shri H.S. Brar, and will discuss, among others, the topics like internal evaluation, grading and recommendations of the Randhawa Committee on agricultural universities. About 150 delegates from 21 agricultural universities are expected to participate in the convention.

Employment scheme for rural youth

The Punjab Agricultural University has prepared a Rs. 42-lakh employment scheme for rural youth and submitted to the Centre for its approval. A team of Indian Council of Agricultural Research had already visited the university to examine its requirements and a grant of Rs. 15 lakhs was expected in the first instance to implement the scheme.

The university also proposes to intensify seed production with a special loan from the World Bank.

New session in UP Varsities to start on 15th November

The Uttar Pradesh Minister for Higher Education has announced that the new academic session in all the universities of the State would begin from 15th November for the graduate and postgraduate classes. This would however exclude professional courses such as law, photography, etc. He further said that the examinations in all the universities had already been completed and the Vice-Chancellors had been directed to ensure that the results were declared before this date.

Bombay Varsity adopts new criteria

On the recommendation of the Academic Council, the Executive Council of Bombay University has decided to award classes to second and third year BA, BSc and BCom students either on the basis of their performance in all the three years or in the first two

Classified Advertisement

ALL INDIA INSTITUTE OF MEDICAL SCIENCES

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Advertisement No. 6/79 Estt. I

Applications will be received by the Director, All-India Institute of Medical Sciences, Ansari Nagar, New Delhi-16, from the Indian citizens upto the 20th Nov., 1979 on the prescribed forms available on request for the following temporary posts:

1. Professor of Neurology: ONE
Pay scale: Rs. 2400-100-2500-125/2-3000 inclusive of N.P.A.
2. Associate Professor: One each for
(i) Hospital Administration (Medical) and
(ii) Pharmacology.
Pay scale: (i) Rs. 2000-75-2525 inclusive of N.P.A. for Medical Officers.
(ii) Rs. 1480-60-1900 for Non-Medical Officers.

Note: For the post of Associate Professor of Pharmacology both Medical and Non-Medical candidates will be considered.

3. Assistant Professor: One each for
(i) Physical Medical and Rehabilitation (ii) Radio-Diagnosis for Dr. R. P. Centre for Ophthalmic Sciences, and (iii) Anaesthesiology.

Pay scale:- Rs. 1700-60-2060 inclusive of N.P.A.

4. Lecturer: One each for
(i) Neuro-surgery & (ii) Ocular Pathology for Dr. R. P. Centre for Ophthalmic Sciences.
Pay scale:- (i) Rs. 1400-60-1760 inclusive of N.P.A. for Medical Officers.
(ii) Rs. 700-40-1100-50-1600 for Non-Medical Officers.

Note: For the post of Lecturer in Ocular Pathology both Medical and Non-Medical candidates will be considered.

5. Senior Nursing Tutor : One
Pay scale: Rs. 650-30-740-35-880-EB-40-960.

6. Junior Research Officer (Radiology) One (Reserved for S/Castes candidates).

Pay scale: Rs. 650-30-740-35-880-EB-40-960 plus N.P.A. for Medical Officers only.

7. Stenographer: 4 (Four) (Reserved for S/Tribes candidates).

Pay scale: Rs. 330-10-380-EB-12-500-EB-15-560.

Upper age limit: 50 years for teaching posts and 30 years for non-teaching posts relaxable for Government servants S/Castes and S/Tribes candidates or otherwise exceptionally qualified candidates. Upper age limit upto 5 years is relaxable in the case of S/Castes and S/Tribes candidates.

Note: S/Castes and S/Tribes candidates called for interview will be paid travelling allowance as per rules of the Institute.

- (ii) The essential qualifications are relaxable at the discretion of the Selecting Authority.

Application forms and detailed information sheet can be obtained personally or on written requests accompanied by a self addressed (0.60 paise) envelope (23 x 8 c.m.).

years only, whichever may be beneficial to them. This decision has been conveyed to all the principals of the affiliated colleges and the Director of Correspondence Courses.

Course in tourism proposed at Bombay

The Bombay University proposes to introduce a course in tourism and hotel management from the next academic session at the undergraduate level. The Vice-Chancellor of the university, Prof. Ram Joshi, said that travel was the best non-formal education and could be imparted especially when one was well informed in advance about the places one visited. He commended the idea of a floating university where a group of students were taken to a place to get first hand glimpses of history, geography, culture and society.

Workshop on manpower planning

The Department of Science and Technology organised a workshop on scientific and technical manpower planning at the Indian Institute of Technology, Bombay, recently. The workshop was inaugurated by Dr. B.D. Nagchaudhuri, former Vice-Chancellor of Jawaharlal Nehru University, and was attended by the Vice-Chancellors, top executives of CSIR and other research and development organisations. The topics discussed at the workshop included, among others, mismatch between the output of scientific and technical manpower and the absorption capacity of the economy with special reference to research and development.

Autonomous status for Madras law college

The Madras Law College is likely to get an autonomous status from the next academic year. As an autonomous institution, it will concentrate on postgraduate and research studies in addition to undergraduate instruction and would have full freedom to try out innovations in the academic sphere, for example, in the

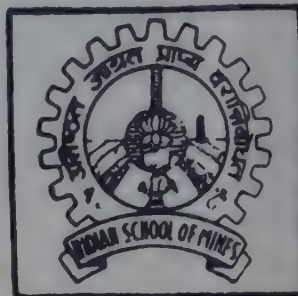
matter of examinations and instruction.

Changes in law course proposed

At the suggestion of the Bar Council of India, the universities in Tamil Nadu are considering a proposal to revise the structure of legal education in the State so as to provide for a four-year law degree course after the 10+2 stage. The idea is to have four years legal education after the

plus two stage leading to the BGL degree and one more year for securing the B.L. degree. The Boards of Studies in Law of the three universities in the State have decided to prepare a draft syllabus for legal study under the revised structure.

The Bar Council has also suggested to the universities to convert the existing morning and evening law colleges and departments into wholtime day colleges and departments.



Indian school of Mines

Dhanbad-826004

No. 217851

Dated: 15-10-79

NOTICE

The Indian School of Mines will conduct 'Qualifying' examination according to the syllabi prescribed by the Board of Mining Examination under the Mines Act (for the grant of First Class Mine Manager's Certificate of Competency) in the following four BME papers :

IA—Methods of Working (Coal)	10-12-79	from (9 a.m.)
IIA—Methods of Working (Metal)	-do-	(2 p.m.)
IB—Mine Management, Legislation and General Safety (Coal)	12-12-79	(9 a.m.)
IIB—Mine Management, Legislation and General Safety (Metal)	-do-	(2 p.m.)

The Academic Council of the School has decided to permit its own graduates (and AISM/diploma-holders) in Mining/Mining Engg—to appear at the said examination. ISM alumni wishing to avail this facility may send their application in the prescribed form, duly completed, alongwith a fee of Rs. 100/- so as to reach the Registrar, Indian School of Mines, Dhanbad-826004 by Nov. 30, 1979. Applications received after the said date will not be entertained.

A viva-voce on the above paper will be conducted at a later date for candidates who qualify in the theory papers for which information shall be sent to them in due course by Regd. Post.

A Gas-Testing examination will be held at 8.00 a.m. on 8-12-1979 at the School for candidates who have not passed the Gas-Testing examination under the Mines Act. Candidates wishing to appear in the Gas-Testing examination should send their application on plain paper by Nov. 30, 1979 to the undersigned alongwith two passport size photographs and Postal Order for Rs 5/- as fee for the examination, payable to the undersigned.

The prescribed application form and a copy of the syllabus for the BME papers can be obtained from the Registrar, Indian School of Mines, Dhanbad-826004, on sending a self-addressed and stamped envelope.

O/ISM/79

S. P. VARMA
REGISTRAR

A list of Doctoral Theses Accepted by Indian Universities

SOCIAL SCIENCES

Anthropology

1. Suryadevara, Vijaya Krishna Prasad. Irrigation and change: A case study of Andhra villages. Andhra University.

Psychology

1. Madohlia, Janaki. Nature of environment and development of form perception. University of Delhi.
2. Mishra, Arbind Bandhu. Assessment of factor-structure invariance of the Wechsler adult intelligence scale across two age groups. Utkal University.
3. Naug, Rabindra Nath. A study of the role of personality factors in the behavioral treatment of writer's cramp. University of Delhi.
4. Siddamma, T. A study of certain behavioural determinants of obesity in children. Sri Venkateswara University.
5. Ushasri, S. A comparative study of the socially disadvantaged and the socially non-disadvantaged pupils with regard to scholastic achievement and academic adjustment. Sri Venkateswara University.

Sociology

1. Mahahing, Phramaha Prachitr. Religion and social system in Thailand. M. S. University of Baroda.
2. Raghuwanshi, Mahendra Singh. Formal education and individual modernity in rural youth: A study of Rajput Satha in Meerut Region. Meerut University.

Political Science

1. Bhatnagar, Sudha. Delegated legislation with special reference to Uttar Pradesh. Agra University.
2. Chatterjee, Dilip Kumar. Impact of Gandhian thoughts on the evolution of the provisions for fundamental rights and directive principles of state policy in the Indian constitution. University of North Bengal.
3. Gopalakrishnan, R. Political geography of a land-locked state: A case study of Afghanistan. Jawaharlal Nehru University.
4. Katmore, Shashikala. Bharatiya samvidhan ke anter-gat siddhant evam vyavhar mein samvedhanik upcharon ka adhikar. (Hindi) University of Indore.
5. Kulkarni, Sudhakar Ganesh. Constitutional amendments to implement the socio-economic objectives of Indian constitution. Marathwada University.

Law

1. Koteswarrao, Pola. Right to property and the Supreme Court under the Indian Constitution: A critical study. Karnatak University.

Economics

1. Bahuguna, Anjali. Present position and future prospects of paper industry in Uttar Pradesh. Meerut University.
2. Bhandari, Snehprabha. Yojanakaal mein Bharat ke dwipakshiya vyaparik anubandhon ka alochanatmak vishleshan. (Hindi) University of Indore.
3. Bodhankar, Sudhir Narayanrao. Working and organisation of city bus service (MSRTC) in Nagpur. Nagpur University.
4. Jena, Basanta Kumar. A study of the growth of iron and steel industry in India since 1947. Utkal University.
5. Kodli, Mahadevappa Chanabasappa. Petroleum industry in India: Some economic aspects. Karnatak University.
6. Pandya, B.A. Performance of the new strategy of agricultural development in Saurashtra: A case study of Junagadh District. Saurashtra University.
7. Pothana, Vinukonda. Urban growth in Andhra Pradesh: An economic analysis. Andhra University.
8. Saroj Singh. The impact of development banking on industrial growth in India since 1951. Meerut University.
9. Tiwari, Ram Shankar. Study of living and working conditions of labourers engaged in limestone quarries of M.P. University of Jabalpur.

Commerce

1. Mallikarjunappa, K. R. Bangalore money market: A

study into the problems of a regional money market. Karnatak University.

2. Sharma, Charanji Lal. Road transport in the Union Territory of Delhi with special reference to the working of the Delhi Transport Corporation. Meerut University.

Education

1. Bansal, Inder Kumar. A comparative study of the ability of students of modern and traditional mathematics. University of Delhi.
2. Devendra Kumar. A study of some identifying college characteristics and teachers' personality needs in relation to organizational climate of colleges of Haryana State. Meerut University.
3. Nair, Pramila. A study of creativity in English language of students at the higher secondary level in some English medium schools in Delhi in relation to their intelligence, achievement and language ability. University of Delhi.
4. Narula, Kirpal Singh. A study of achievement, motivation, personal preferences, perception, anxiety, risk taking behaviour and other correlates in relation to intelligence, socio-economic status and performance of the prospective secondary school teachers of Orissa State. M. S. University of Baroda.
5. Nayana Tara, B. A study of the relationship between creativity, tolerance of ambiguity and perceptual simplicity complexity of students studying in VIII & IX Standards of secondary schools of Bangalore City. Bangalore University.
6. Pankajam, G. An analysis of language development in children among the age group 2½ to 5 years, who are attending and who are not attending pre-schools. Madurai University.
7. Sarma, Mukul Kumar. A critical survey of the environmental factors in the education of the secondary school students. Gauhati University.
8. Sarma, Nandita. An investigation into the basic Assamese vocabulary of children of class VI (usually eleven plus) in the secondary schools of the State of Assam. Gauhati University.
9. Shah, Anupama Joel. A critical study of the programmes of non-formal education in Baroda City and their impact on the community. M. S. University of Baroda.

HUMANITIES

Philosophy

1. Alvi, M. Kabir ke rahasyanubhuti evam dharmik chetna ka swarup. (Hindi) University of Jabalpur.
2. Verma, V. K. A study in the metaphysics of ideal language philosophy. University of Jabalpur.

Linguistics

1. Balakrishnan, B. C. Sanskrit loan words in Malayalam. University of Kerala.

Literature

English

1. Devanesan, Miriam Jeyavanthi. The American twenties as reflected in the novels of Sinclair Lewis. Osmania University.
2. Gilra, Shiv Kumar. R. K. Narayan: An assessment of his novels and short stories with a special study of his comic genius. Meerut University.
3. Sayal, Prem Dayal. Frank Norris: The apostle of naturalism. Meerut University.
4. Solanki, Vinod. Angus Wilson as a novelist and short story writer. Agra University.

Sanskrit

1. Bandyopadhyay, Ranajit Kumar. Vedanter aloke Srimatbhagabat. University of Burdwan.
2. Dehadrai, Wamanrao. Shukla yajurved madhyanidin sanhityevaril Mahidhar bhashyche sajol va tokenik adhyayan. Nagpur University.
3. Deshpande, Rohini Pramod. Samritivak myateel istrijiwan. Nagpur University.
4. Dwivedi, Shankarlal. Shanti parv mein pratipadit

(Continued on page 567)

A list of select articles culled from Periodicals received in AIU library during October, 1979

EDUCATIONAL PHILOSOPHY

- Altbach, Philip G. "University as centre and periphery". *Journal of Higher Education* (Delhi) 4(2); Autumn 78: 157-69.
- Carr, Wilfred. "Philosophical styles and educational theory". *Educational Studies* 5(1); Mar 79: 23-33.
- Phillips, D. Z. "Is moral education really necessary?" *British Journal of Educational Studies* 27(1); Feb 79: 42-56.
- Wyatt, J. F. "Hanna Arendt: A political theorist on the theme of renewal in education." *Educational Studies* 5(1); Mar 79: 7-13.

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CSIR PUBLICATIONS

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UNIVERSITY OF DELHI DELHI-110007

Advt. No. Estab. IV/61/79

Dated 15th October 1979

Applications on the prescribed form are invited for the following posts :

Department	Designation
Hindi	Two Professors (One each for Main & South Campus) One Director
Directorate of Hindi Medium Implementation] Economics	i) Three Professors ii) One Reader iii) Research Associates
Faculty of Law Compus Law Centre Law Centre No. 1	Two Readers One Lecturer (temp. against leave Vacancy upto 3-10-1981) One Lecturer (temporary but likely to continue) One Reader One Reader One Lecturer One Lecturer in Education (Commerce) Research Associate
Law Centre No. 2	i) One Reader ii) Two Technical Assistants (Temp. but likely to continue) (One each reserved for Scheduled Caste and Ex-service- man)
Mathematical Statistics Mathematics Operational Research Education Zoology Chemistry	iii) Nine Laboratory Attendants (Tempo- rary but likely to continue) One each reserved for Scheduled Caste and Scheduled Tribes and two for Ex- service-man) One Senior Technical Assistant (Photographer) Eight Semi Professional Assistants (Three reserved for Scheduled Caste, Two for Scheduled Tribes and One for Ex-service-man).
Botany	
Delhi University Library System	

Note :—General candidates would also be eligible to apply. The general candidates would, however, be considered only if no suitable Scheduled Caste/Ex-service-man candidates are available for appointment to the vacancies reserved for them.

Note :—Completed application for the posts of Semi Professional Assistant may be sent to the Librarian, Delhi University Library System, Delhi-110007.

The Scales of pay of the posts are :

Professor	: Rs. 1500-60-1800-100-2000-125/2-2500.
Reader	: Rs. 1200-50-1300-60-1900.
Lecturer	: Rs. 700-40-1100-50-1600
Director	: Rs. 1500-60-1800
Research Associate	: Consolidated monthly emoluments as under : A—Rs. 1,000/- p.m. (Fixed) B—Rs. 1,200/- p.m. (Fixed) C—Rs. 1,400/- p.m. (Fixed) On the recommendation of the Selection Committee.
Senior Technical Assistant	: Rs. 550-25-750-EB-30-900.
Technical Assistant	: Rs. 425-15-500-EB-15-560-20-700.

Semi Professional Assistant	} Rs. 380-12-440-EB-15-560-EB-20-640.
Laboratory Attendant	

All posts (Except Research Associates) carry D.A., C.C.A. and H.R.A. as admissible under the rules in force in the University from time to time.

Essential Qualifications for Professorships

A Scholar of eminence. Independent published work of high standard and experience of teaching Post-graduate classes and guiding research for a considerable period desirable.

Readerships

Good academic record with first or high second class Master's Degree in the subject concerned with a Doctor's Degree or equivalent published work. Independent published work (in addi-

tion to the published work mentioned above) with atleast 5 years' teaching experience in Honours/Post-graduate classes essential.

Lectureships

(Other than Law, and Education (Commerce))

Essential

Good academic record with a first or high second class Master's Degree or an equivalent degree of a foreign University in the subject concerned.

(Note—Second Class would mean atleast 50% marks in the subject or equivalent grade).

Desirable

(i) A Doctor's Degree or Evidence of Research work of equivalent standard in the subject concerned. (ii) Teaching experience of Degree/Post graduate Classes.

Provided if a teacher is not a Ph.D./M. Phil/M. Litt. at the time of his/her appointment and does not qualify himself/herself for the award of Ph.D./M. Phil/M. Litt. Degree from a recognised University in a subject which is being taught by him/her within a period of five years from the date of his/her appointment or does not give evidence of research work within that period in the subject concerned, he/she shall not be entitled to any future increments after the expiry of the said period of five years till such time he/she fulfils the above mentioned requirements.

Lectureship in Law

Consistently good academic record with a first or high second class (B+) Master's Degree in the Law OR an equivalent Degree of a foreign University in the subject concerned.

Explanation

Consistently good academic record would mean overall record of all assessments throughout the academic career leading to the Master's Degree which should be atleast B+ or high second class.

Lectureship in Education (Commerce)

Essential

Good academic record with a first or high second class Master's Degree or an equivalent degree of a foreign University in Education and in Commerce.

(Note :—Second class would mean atleast 50% marks in the subject or equivalent grade).

Desirable

(i) A Doctor's Degree or Evidence of Research work of equivalent standard in the subject concerned. (ii) Teaching experience of Degree/Postgraduate classes/school/Training College. (iii) Provided if a teacher is not a Ph.D./M. Phil./M. Litt. at the time of his/her appointment and does not qualify himself/herself for the award Ph.D./M. Phil./M. Litt. degree from a recognised University in a subject which is being taught by him/her within a period of 5 years from the date of his/her appointment or does not give evidence

of Research work within that period of the subject concerned, he/she shall not be entitled to any future increments after the expiry of the said period of 5 years till such time he/she fulfils the above mentioned requirements.

Director

(Directorate of Hindi Medium Implementation)

1. A first or high second class Master's degree with Ph.D. or equivalent published work.
2. Publications of quality on technical subjects.
3. Experience of teaching University classes for atleast 10 years.

Research Associates

(Economics, and Zoology)

Consistently Good academic record with first or high second class (B+) Master's degree or an equivalent degree of a foreign University in the subject concerned.

Note :—Initial appointment will be for a tenure period of 3 years, extendable by another 2 years only. In no case the tenure will extend beyond 5 years in all.

Senior Technical Assistant

(Photographer)

Diploma in Photography from a recognized Institution. Experience in macro and micro photography, knowledge of preparation of projection slides, documentation, developing, enlarging and printing.

Technical Assistant

Graduate in Science. Experience in Laboratory Techniques of the subject.

Laboratory Attendants

Should have passed the Matriculation or an equivalent Examination with Science subjects.

Semi Professional Assistants

B.A./B.Sc./B. Com. Diploma/Certificate in Library Science. (Candidates will be required to take and qualify the prescribed test in General English).

Special/Desirable Qualifications

Director

(Directorate of Hindi Medium Implementation)

Special

1. Proficient knowledge of English and Hindi.
2. Long experience of translation from English to Hindi and vetting of standard scientific and technical texts.
3. Experience of terminological and lexicographical work.
4. Administrative Experience of running an academic Institution.

Desirable

Research Experience in the field of technical terminology.

Professorships in Economics

(a) For first post

Area Studies

The Professor appointed in this post, in addition to his normal duties in the department will be expected to supervise research work in Area Studies (Pakistan and/or Bangladesh Economy).

(b) For Second post

Preference will be given to a scholar who has specialization in Economic Theory, International Economics of Monetary Economics

Semi Professional Assistants

Knowledge of Modern Indian Language preferably Telugu, Kannada, Malayalam, Oriya and Sindhi

Readership in Mathematical Statistics

Special :—Specialization in one or more of the following :
Renewal Theory, Sample surveys, Multivariate Analysis and Inference (other than non-parametric and order-statistical).

Desirable :—Experience of teaching one or more of the following topics :
Operational Research, Econometrics, High speed computation and topics of

specialization (mentioned above).

Readership in Mathematics

Specialization in Abstract Algebra.

Lectureship in Operational Research

Knowledge of Computer Programme.

Lectureship in Law (Law Centre No. 1)

Specialization and/or teaching experience in any of the following subjects :

(i) Trade Marks, Copyright and Patents; (ii) Labour Law; (iii) Taxation; (iv) Military Law; (v) Law Relating to Elections; (vi) Legislative Drafting; and (vii) International Law.

Readership in Chemistry

The candidate may have specialization in any of the following fields viz., Organic/Inorganic/Physical Chemistry.

Laboratory Attendant

Should have worked in a Laboratory.

The prescribed application form can be had from the Information Office of the University either personally or by sending a self addressed envelope (size 13 Cm.x28 Cm.) with postage stamps worth Rs. 2-85.

The candidates will have to produce the original documents relating to their age, qualification, experience, etc. at the time of interview.

Applications (separate for each post) accompanied by attested copies of Degrees other certificates, marksheets, published research articles, etc. should reach the undersigned not later than 15th November, 1979.

Applications, complete in all respects, for the posts of Semi Professional Assistant should, however, be sent to the Librarian, Delhi University Library System, Delhi-110007, so as to reach him not later than 15th November, 1979.

Note :—It will be open to the University to consider the names of suitable candidates for teaching posts and for the post of Director, who may not have applied. Relaxation of any

Theses of the Month

(Continued from page 563)

achar-dharm ka samalochnatmak adhyayan. University of Jabalpur.

5. Sharma, Ram Swarup. Prachin senya vaigyan ke drishti se 10vin shtabadi tak ke Sanskrit mahakavyon mein yudhon ka varnan aur un per Ramayan Mahabharat ka prabhav. Agra University.

Punjabi

1. Dhir, Kuldip Singh. Swatantrta pichhon Punjabi natak: Ik sarvpakhi vishleshan. Punjabi University.

Hindi

1. Bhattacharjee, Mithali. Adhuik Hindi kavita mein Gandhivad. Bangalore University.

2. Gupta, Santosh. Hindi ki swatantryottar kahani mein abhivyavit mulya. Meerut University.

3. Harit, Gyanesh Dutt. Nagarjuna: Vyaktitv aur krititv. Meerut University.

4. Kaiser Kaur. Samkaleen Hindi kahani ka samaj sapeksh adhyayan. Meerut University.

5. Kalbhor, Nathoo Ram. Hindi kosha-sahitya; Samikshatmak adhyayan. Agra University.

6. Nema, Vishnu Prasad. Kripaludas aur unke kavya. University of Jabalpur.

7. Parmar, Mahendra Singh. Hindi sahity mein sahityik jiwni: Ek adhyayan. University of Jabalpur.

8. Prem Kumar. Swatantryottar Hindi upanyas ka kathya-vishleshan. University of Delhi.

9. Seetharamaiah, Gorthy. Dr. Vasudevasaran Agrawal: Vyaktitv aur krititv. Agra University.

10. Umre, Karuna Naresh. Shri Bhagwati Charan Verma ke vyaktitv evam krititv ka anusheelan. Nagpur University.

11. Vyas, Kishori Lal. Acharya Ramchandra Shukla ke samiksha paddhati per paschatya prabhav. Osmania University.

Bengali

1. Mukhopadhyay, Somnath. Bhagalpurer Saraswant Samaj-o-Bangla sahitya. University of Burdwan.

Marathi

1. Pofley, Narendra Ganesh. Kavi Anil: Kavitya ani vayaktitv. Nagpur University.

Persian

1. Zakira Sultan. Indo-Persian literature during the period of Shahjahan, 1628-1658. University of Delhi.

Telugu

1. Elizabeth Kumari, Z. Historical novels in Telugu. Sri Venkateswara University.

Geography

1. Pandey, Paras Nath. Rural settlements in the Karmanasa basin. Agra University.

2. Roy, Phani Bhusan. Population and settlement of the district of Midnapur, West Bengal: A geographic analysis. University of Burdwan.

History

1. Agarwal, Ajai Kumar. Maulana Abulkalam Azad aur Bharatiya rashtriya andolan, 1912-74. Agra University.

2. Kansal, Prahlad Singh. Socio-economic history of the people of Meerut Division from 1900-1947. Meerut University.

of the qualifications may be made in exceptional cases, in respect of all teaching posts and for the post of Director on the recommendation of the Selection Committee.

2. Canvassing in any form by or on behalf of the candidates will disqualify.
3. Candidates from outside Delhi, for teaching posts only called for interview will be paid to and fro single second class rail fare.
4. The University reserves the right not to fill up any of the vacancies advertised, if the circumstances so warrant.
5. Those who have applied in response to the earlier advertisement for the posts of Professor in Economics need not apply again, but in case they have any additional information to supply, they may do so.

REGISTRAR

UTKAL UNIVERSITY BHUBANESWAR

Advertisement No. Estt./911-C/24554/79
dt. 25-10-79

Applications in Seven Copies are invited in the prescribed form alongwith attested copies of certificates and marklists of all examinations passed for the post of Professor in Plant Physiology in the P.G. Department of Botany of the University on or before 20-11-79.

No.	P.G. Department	Post	No.	Specialisation
1.	Botany	Professor (Temporary)	1	Plant Physiology

Scale of Pay

Professor—1500-60-1800-100-2000-125/2-2500/-

Age of Superannuation—60 years.

Essential Qualification

Professor:— The Professor shall

- i) be a Scholar of eminence.
- ii) Possess a good academic record with First or High Second Class Master's Degree in Botany or Plant Physiology. In case of other suitably qualified candidates, the High Second class at M.A./M.Sc./M. Com. may not be insisted upon;
- iii) have a Doctorate Degree or published work of equivalent Standard;
- iv) have independent published research work of high standard in addition to the published work mentioned in (iii) above;
- v) be engaged in active research and have experience of having successful supervision of doctoral research in plant physiology.

vi) be teacher for ten years out of which at least seven years should have been spent in regular teaching in post-graduate/Honours classes.

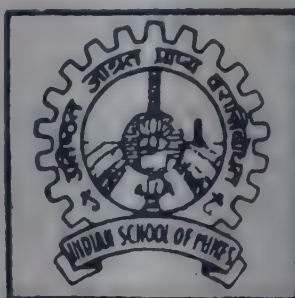
Prescribed application forms can be had from the Registrar, Utkal University in person on payment of Rs. 7-49 including local sales tax (Rupees seven and paise fortynine only) or by post on receipt of a Crossed Indian Postal Order for Rs. 9/- (Rupees nine) only payable to the Registrar, Utkal University, Vani Vihar, Bhubaneswar-4.

versity, Vani Vihar, Bhubaneswar-4.

Candidates in Govt. service, if selected for the posts for which they have applied would be asked to pay Pension contribution and leave salary in case they join the University Service on foreign service terms and conditions.

The University reserves to itself the right to decide the number of posts to be filled.

REGISTRAR



Indian school of Mines

Dhanbad-826004

No. 615126/79

October 15, 1979

Admission to Advanced Diploma course in Mining Electronics

Applications are invited from candidates possessing the requisite qualifications for admission to ONE (OPEN) SEAT in one-year Advanced Diploma Course in Mining Electronics and Telecommunication being offered by the ISM Deptt of Electronics and Instrumentation, with financial support from Electronics Commission.

2. Eligibility Requirements

Diploma in Elec/Electronics Engg (or equivalent) with at least 60% marks and Preferably one year experience in mines.

3. Stipend

The selected candidate will be given a stipend of Rs 250/- p.m awarded by M/s Bharat Aluminum Co. Ltd.

4. General

4.1 The course will start in December 1979.

4.2 Candidates who have already applied in response to ISM Advertisement No. 615126/79 dated March 29, 1979 need not apply again. Their application will be considered along with the fresh application.

4.3 Candidates will have to appear for an interview/test at Dhanbad at their own expense.

4.4 Application forms (along with the relevant information bulletin) can be obtained by sending a Crossed Postal Order for Rs. 5/- (Rupees Five only) made payable to the Registrar, Indian School of Mines, Dhanbad-826004.

4.5 Last date for Receipt of Completed Application :
November 15, 1979

O/ISM/79

S.P. VARMA
REGISTRAR

INDIAN INSTITUTE OF TECHNOLOGY

P.O. I.I.T., POWAI,
BOMBAY-400 076

Advertisement No. 984/79

Applications are invited, for the following permanent posts at this Institute, in the prescribed form obtainable free of charge from the Registrar, Indian Institute of Technology, P.O.I.I.T., Powai, Bombay-400 076 on request accompanied by self-addressed envelope (25 cm x 10 cm). Persons employed in Government/Semi-Government Organisations or Educational Institutions must apply through proper channel. Indian candidates abroad may apply on plain paper in duplicate. The posts carry allowances such as D.A., C.C.A., H.R.A. as per rules of the Institute which at present correspond to those admissible to the Central Government Employees stationed at Bombay. Completed application should reach the Registrar, Indian Institute of Technology, Powai, Bombay 400 076 on or before 30th November, 1979. Some posts are reserved for SC/ST candidates.

1. **Lecturer:** Scale of pay Rs. 700-40-1100-50-1600.
2. **Computer Engineer:** Scale of pay Rs. 700-40-1100-50-1300.

Qualifications, Experience & Field of Specializations

1. Lecturer

Applicant should have consistently excellent academic record with post-graduate degree/diploma in the appropriate field mentioned below from a recognised University/Institute.

At least two years experience in teaching/research/industry in the relevant field of specialisation.

Field of Specialisations

(a) Civil Engineering Department

(i) Photo Interpretation/Remote Sensing/Photogrammetry (ii) Construction Engineering

(b) Mechanical Engineering Department

(i) Machine Design/Mechanisms (ii) Machine Tools and (iii) Energy conversion (New Energy Sources)

(c) **Computer Centre:** (Any one or more of the following)

Computer Hardware and Software, Theory of Computation, Artificial Intelligence, Pattern recognition, speech and signal processing, OR and Management systems, Picture processing, Computer communication, simulations and modelling, microprocessors, applications.

2. Computer Engineer: Computer Centre

Qualifications & Experience Essential

B.E./B.Tech. in Electronics, Computer Science or Communication.

Desirable

M.Tech. in Computer Science/Technology.

Experience

3 years experience in the maintenance/development of digital systems essential; relaxable in the case of M.Tech. Experience in the maintenance of 3rd generation medium/large scale systems desirable.

PANJAB UNIVERSITY CHANDIGARH

Advertisement No. 23/79

Applications are invited for the post of Professor of English in the Department of English, Panjab University, Chandigarh, in the pay-scale of (Rs. 1500-60-1800-100-2000-125/2-2500) so as to reach the Registrar, Panjab University, Chandigarh, along with the postal order of Rs. 10/- by 16.11.1979. Fourteen days extra time is permissible to the persons who have to submit their applications from abroad.

Qualifications

- (a) A first or high second class Master's degree of an Indian University or an equivalent qualification of a foreign University in the subject with bright academic record;
- (b) Either a Research degree of doctoral standard or published Research work of high standard in journals of repute.
- (c) About 10 years experience of teaching Post-graduate classes and/or research; and
- (d) Experience of guiding research at Doctoral level.

OR

An outstanding scholar with

established reputation who has made significant contribution to knowledge in the discipline concerned.

Candidates who do not possess a doctoral degree are required to submit 10 typed/cyclostyled copies of brief resume of their published work.

Persons already in service should route their applications through proper channel. Incomplete forms and those received after the due date will not be entertained. Serving employees may, however, send their applications on the prescribed proforma, direct to the University. They may route another copy through their Department. They will be allowed to present themselves for interview only on the production of a 'No Objection Certificate' from their employers. Canvassing in any form will disqualify the candidate.

Application forms can be obtained from the Cashier, Panjab University, Chandigarh, personally on payment of Rs. 2/- or by making a written request to the Finance and Development Officer, Panjab University, Chandigarh, accompanied by self-addressed stamped envelope of 23 x 10 cms. and a postal order for Rs. 2/- drawn in favour of the Registrar, Panjab University, Chandigarh.



Indian school of Mines

Dhanbad-826004

No. 615126/79

October 15, 1979

Admission to Make-up Semester of Adv dip in Mine Surveying

Applications are invited from IN-SERVICE candidates possessing requisite qualifications for admission to MAKE-UP SEMESTER of Advanced Diploma Programme in Mine Surveying being offered by the School, which is deemed to be a University under UGC Act. This make-up semester (16 weeks) is in addition to the regular one-year course.

2. Eligibility conditions: Matriculation/SSLC with Mine Surveyors certificate of competency granted under the Mines Act Plus one year experience as surveyor in underground mining after obtaining the said certificate.

Maximum Age Limit is 45 years.

3. Preference will be given to the sponsored candidates. Sponsorship in this context means retention of lien on post and grant of suitable allowance. Application of sponsored candidates should carry suitable endorsement by the employer.

4. Application forms along with the relevant information bulletin can be obtained by sending a Bank Draft/Crossed Postal Order for Rs. 5/- made payable to the Registrar, Indian School of Mines, Dhanbad-826004.

Last Date for Receipt of Applications : November 20, 1979

**S.P. VARMA
REGISTRAR**

O/ISM/79

ANDHRA PRADESH AGRICULTURAL UNIVERSITY

Administrative Office 'Rajendranagar' Hyderabad-500030

Advertisement No. 7/79 Dated: 25-10-1979

Applications are invited in the prescribed form, along with registration fee of Rs. 5/- for the posts of Junior Scientists in the Faculties of Agriculture and Veterinary Science in the Andhra Pradesh Agricultural University so as to reach the Registrar on or before 30-11-1979.

S. No.	Disciplines in which vacancies of Junior Scientists exist	Qualifications
i) (a) Faculty of Agriculture		
(a) Agronomy	}	(i) A degree of B.Sc. (Ag.) or any other equivalent qualification of a recognised University.
(b) Soil Science and Agril. Chemistry		
(c) Plant Breeding & Genetics		(ii) A post-graduate degree in the subject concerned.
(d) Agricultural Economics		
(e) Plant Physiology		
(f) Horticulture		
(g) Plant Pathology		
(h) Entomology		
(i) Agricultural Engineering		
(j) Agricultural Extension		
(b) Faculty of Veterinary Science		
(a) Medicine	}	(i) A degree of B.V.Sc. or any other equivalent qualification of a recognised University.
(b) Poultry Science		
(c) Animal Science		(ii) A post-graduate degree in the subject concerned.
(d) Physiology		
(e) Surgery		
(f) Animal Breeding & Genetics		
(g) Meat Science & Technology		
(h) Microbiology		
(i) Parasitology		

Consolidated Pay

(ii) The persons appointed as Junior Scientists will be paid consolidated pay as follows:

a) Persons with Master's degree in the concerned subject Rs. 900/- p.m.

b) Persons with Ph.D. degree in the concerned subject Rs. 1,000/- p.m.

(iii) The appointments will be purely temporary and are liable to be terminated at one month's notice on either side.

(iv) Rule of Reservation for candidates belonging to Scheduled Castes, Scheduled Tribes and Backward Classes will be observed in making appointments to the temporary posts of Junior Scientists.

(v) Applicants should appear for interview at their own cost, if so required before the Selection Committee at the Headquarters of the University.

(vi) Selected candidates will be posted as Junior Scientists in teaching, research or extension in any Colleges or Research Station under the University and are liable to be transferred to any place within the jurisdiction of the University.

(vii) Application forms can be had from the Registrar, Andhra Pradesh Agricultural University, Administrative Office, Rajendranagar, Hyderabad-500030 on payment of Rs. 2/- in person or through postal order.

T. Narayan Reddy
REGISTRAR

(8 copies) available from the office of the Registrar on payment of Rs. 5/- for the post of Professor/Reader and Rs. 2/- for the post of lecturer as registration fee payable in cash or postal order drawn in favour of the Registrar, University of Gorakhpur, Gorakhpur, by name, are invited so as to reach this office through the employer, if employed, not later than 25-11-79 for the following posts:

Lecturer

English—One post—Temporary.

Political Sc.—Two posts—Temp.

Mathematics—One post—Temp.

Commerce—One post—Permanent

Pay Scale: 700-40-1100-50-1600.

Qualifications

1. (a) A doctorate in the subject of study concerned or a published work of a High standard in that subject, and

(b) Consistently good academic record (that is to say the over all record of all assessments throughout the academic career of a candidate) with first class or high second class (that is to say, with an aggregate of more than 54% marks), Masters degree in the subject concerned or equivalent degree of a foreign University in such subject.

2. Where the Selection Committee is of the opinion that the research work of a candidate as evidenced either by his thesis or by his published work, is a very high standard, it may relax any of qualifications specified in sub-clause (b) of clause 1.

3. If a candidate possessing a qualification in sub-clause (a) of clause 1 is not available or is not considered suitable (due weightage being given to M.Phil or equivalent degree or research work of quality) may be appointed on the condition

that he will attain the prescribed qualification (namely doctorate or published work as aforesaid) within 5 years from the date of his appointment.

Provided that where the teacher so appointed fails to attain the prescribed qualification within the said period of 5 years, he shall not be entitled to yearly increments after such period, until he attains such qualifications.

Professor

English—One post—Permanent (Post sanctioned under Vth five year plan)

Mathematics—One post—Permanent

Pay Scale: 1500-60-1800-100-2000-

125/2-2500.

Qualifications

Persons should possess the minimum qualification prescribed for the post of a lecturer as mentioned above, and in addition, the candidate should have a reputation of eminent scholarship and must have published standard research work to his credit and should have considerable experience of guiding research. No teacher appointed before 26 January, 1977 shall be deemed to be qualified for appointment to the post of Reader or Professor if he does not possess the qualifications mentioned above, provided that where the Selection Committee is of the opinion that the research work of a candidate as evidenced by his thesis or by his published work is of a very high standard, it may relax any of the qualifications specified in sub clause 1 (b).

In the case of appointment of a Professor, the Committee may with the approval of the Vice-Chancellor consider the names of persons who have not applied.

Assistant Librarian

Professional Junior (Assistant Librarian) Two Posts.

Pay Scale: 500-1000.

1. First or Second class B.A./B.Sc./B.Com. plus First or Second class M.Lib. Science (2 year course) OR First or Second class M.A./M.Sc./M.Com. plus First or Second class B.Lib. Science or Diploma in Library Science.

2. At least five years experience as Librarian or in a responsible professional capacity in Library.

3. Recognised research experience or work on special project. The degree of M.Lib. Science being a preferential qualification.

4. Qualification No. 3 can be relaxed in case of a candidate who is otherwise qualified because of his long technical experience of the work required for the job and aptitude for academic service.

The candidates will be required to appear for the interview, if called, at their own expenses. The Selection Committee may recommend higher initial salary to a person specially qualified for the above posts. It will be open to University not to fill up any post advertised. Canvassing in any form by or on behalf of the candidate will disqualify him.

Note: The No. of Posts can increase or decrease.

REGISTRAR

UNIVERSITY OF GORAKHPUR

GORAKHPUR
No. 2708/Gen. Admn./79

Dated: Oct 27, 1979

Advertisement No. 11

Applications on the prescribed form

University news

FORTNIGHTLY CHRONICLE OF HIGHER EDUCATION & RESEARCH NOVEMBER 15, 1979



Dr. C. R. Mitra, President, Association of Indian Universities, delivering the inaugural address of the UNESCO Meeting on recognition of studies, diplomas and degrees in Asia and Oceania held at New Delhi. Mr. P. N. Kirpal, Mr. Trapero of UNESCO, and Prof. S. Gopal are also seen in the picture.

JAWAHARLAL NEHRU UNIVERSITY NEW DELHI-110067 Advt. No. Aca. III/22/79

Applications are invited for the following posts:

SCHOOL OF SOCIAL SCIENCES Zakir Husain Centre for Educational Studies

1. Professor/Senior Fellow in Educational Studies (Leave vacancy) Essential Qualifications

- Consistently good academic record with at least a high second class Master's degree in Economics / Sociology / Psychology or History or an equivalent qualification from an Indian/foreign University.
- A doctor's degree in relevant social sciences or published work of an equally high standard in a field which should be relevant to the area of Educational Studies; and
- About 10 years' experience of teaching and/or research in a field which should be relevant to the area of Educational Studies.

Desirable

- Professional experience at sufficiently high levels in Educational Administration or Educational Planning;
- Evidence of high proficiency in handling mathematical and/or quantitative analysis; and
- Evidence of having successfully guided doctoral work.

Centre for the Study of Regional Development

2. Senior Technical Assistant (Cartography) Essential Qualifications

- Good Master's degree in Geography;
- High Quality of draftsmanship; and
- Adequate knowledge of statistical methods in geo-graphical studies.

Desirable

Acquaintance with methods of computer mapping.

SCHOOL OF LANGUAGES

Centre of German Studies

3. Assistant Professor (Leave Vacancy) Essential Qualifications

- Consistently good academic record with at least a high 2nd class Master's Degree in German or its equivalent qualification from an Indian / foreign University; and
- A doctor's degree or published work of an equally high standard.

Provided that if the Selection Committee is of the view that the research work of a candidate as evident either from his/her thesis or from his/her published work is of very high standard, it may relax any of the qualifications prescribed in (a) above.

Provided further that if a candidate possessing a Doctor's degree or equivalent research work is not available or is

not considered suitable, a person possessing a consistently good academic record (weightage being given to M.Phil. or equivalent degree or research work of equality) may be appointed provided he/she has done research work for at least two years or has practical experience in a research laboratory/organisation on the condition that he/she will have to obtain a Doctor's degree or give evidence of research work of equivalent high standard within five years of his/her appointment, failing which he/she will not be able to earn future increments until he/she fulfils these requirements.

4. Technical Assistants—two (temporary) Essential Qualifications

- Graduate in Science;
- Diploma or equivalent qualifications in audio-visual technology; and
- At least one year experience in dealing with audio-visual teaching-aids;

SCHOOL OF ENVIRONMENTAL SCIENCES

5. Senior Technical Assistant Essential Qualifications

M.Sc. in Geology with minimum of 2 years of experience in arranging and demonstrating laboratory experiments and analytical instruments used in geological laboratories.

SCHOOL OF INTERNATIONAL STUDIES

Centre for East Asian Studies

6. Research Assistant (for one year in the first instance) Essential Qualifications

A first or high second class Master's degree in History/Political Science/Economics/Sociology.

Desirable

- Some research experience and knowledge of Contemporary East Asian Affairs; and
- Knowledge of Chinese/Japanese.

SCALES OF PAY

- Professor/Senior Fellow: Rs. 1500-60-1800-100- 2000- 125/ 2-2500.
- Assistant Professor: Rs. 700-40-1100-50-1600.
- Senior Technical Assistant: Rs. 550-25-750-EB-30-900.
- Technical Assistant: Rs. 425-15-500-EB-15-560-20-700.
- Research Assistant: Rs. 550-20-650-25-750.

Plus usual allowances as admissible to the members of the staff in the Central Universities.

Relaxation in any of the qualifications may be made (a) in favour of persons of eminence or of high academic/professional distinction, and (b) in exceptional cases where adequately qualified persons are not available but are otherwise found suitable for the respective positions. It will also be open to the University to consider the names of suitable candidates who may not have applied.

The selected candidates will be expected to participate in the teaching and research programmes in the concerned disciplines in other Schools of the University as well as in the programmes offered in their own Centres of Studies.

Benefits of C.P. Fund-cum-Gratuity/G.P. Fund-cum-Pension-cum-Gratuity are available as per University Rules.

Persons already in employment should route their application through proper channel.

For Sr. Technical Assistant/Technical Assistant/Research Assistant

(i) Age Limit: 40 years.

(ii) 16½% and 5% posts are reserved for Scheduled Castes and Scheduled Tribes candidates respectively.

Second class (mail) rail fare (both ways) will be paid to candidates invited to appear for interview from outstation by the shortest route subject to the production of rail receipt.

Applications, separate for each post, on the prescribed form, obtainable free of cost from the University by sending a self-addressed and stamped envelope (affixing Postage Stamps worth Rs. 2.85) of 23 cm x 10 cm size to the Deputy Registrar (Academic), Jawaharlal Nehru University, New Mehrauli Road, New Delhi-110067, should reach him latest by 20th December, 1979.

Candidates from abroad applying for faculty positions may apply on plain paper, (but their applications should reach the University by the last date) furnishing all the relevant informations such as their names, date and place of birth; marital status; nationality; state of domicile; postal and permanent addresses; father's name and address; academic and professional attainments; full details of (a) publications, and (b) research projects undertaken; language(s) known; details of visits to foreign countries; and the names and addresses of at least two persons well acquainted with the candidates professional work who should also be requested by the candidate to forward to the Deputy Registrar (Academic) confidential report concerning the candidate.

UTKAL UNIVERSITY CORRIGENDUM

Corrigendum to advertisement No. Estt. 1/919-C 24554/79 dated 25-10-79

The earlier advertisement is partially modified and Changes made be read as follows :—

Sl. No.	P.G. Department	Post	No.	Specialisation
1.	Botany	Parija Professor in Plant Physiology.	1 (Temporary)	Plant Physiology

In case of candidates appointed from Govt. Service, the University will bear the leave salary pension contribution for a period of two years only.

University Office,
Vani Vihar, Bhubaneswar-4.

S.K. Panda
REGISTRAR

UNIVERSITY NEWS

Vol. XVII NOVEMBER 15
No. 22 1979

A Fortnightly Chronicle of Higher Education Price
80 Paise

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*Opinions expressed in the articles
and reviews are individual and do
not necessarily reflect the policies
of the Association*

Editor : ANJNI KUMAR

Diplomas & Degrees in Asia and Oceania

The task before our meeting, is multipurpose as well as multiple in its role and in its interfacing. UNESCO has, since 1968, been concerned with the need of equivalence and recognition of degrees and diplomas in higher education to facilitate a world-wide mobility of students, scholars and professionals. The instruments available in earlier times of less breakneck speed and less domain of operation are simply inadequate in a world which has seen a phenomenal increase in the size and the diversity of the university systems. Wisely, therefore, UNESCO planned a series of regional conventions. Three such conventions have already taken place and ours cover the region of Asia and the Oceania. Now, this region is at the same time, the most populous and also most diverse in the world. If we

promise, inspite of the system. I realize, the duality of the task is not easy to resolve. But I am sure that this distinguished collection of experts, from a region which played an important role in man's history, can give new directions to the solving of this problem.

It would seem to me, while the microscopic examination of syllabus and course-content is valid, this must be put against the larger perspective of the structure and duration and methods of admission to various degree programmes. We thus need to develop more insight into the status of the art in our respective countries in the region. Surely, inter-governmental linkages and exchange of information would help, but would not be adequate. I suggest full advantage should be taken of the different voluntary

[Excerpts from the inaugural address of Dr. C.R. Mitra, President, AIU and Director, Birla Institute of Technology and Science at the UNESCO Meeting on recognition of studies, diplomas and degrees in Asia and Oceania held at New Delhi from November 12-16, 1979].

have stage-fright, we are reassured by the excellent work done by the earlier conventions and the good working document prepared by UNESCO.

While the instrument of a convention, towards which we are working, is a basic need to cope with the problem, I have my concern whether a set of codified procedure may not become too rigid. It is true that, our present make-shift rule-of-thumb procedure need to be more widely codified, but we must not lose sight of the value of inspired guesses, which alone can crack many difficult nuts. After all, equivalence is not merely between two systems, but is ultimately applied to an individual, who is the product of the system. Let codifications not become so mechanical as to shut off the considerations of individual merit and

agencies within each country, as well as, between the countries. For example, the Association of Indian Universities, in India, and similar Associations in other countries can, and should, develop a net-work of information to provide base data for planners. It is through such analysis of data that, we can recommend an instrument which is not merely top-down but concedes the concomittant virtue of bottom-up.

I have no doubt in my mind that your labours will give us better insight, tease meanings out of words and give us a wide-angle vision. Perhaps through the commonality that we discover, we might be able to design a regional baccalaureate degree on the same lines as the international baccalaureate.

In an endeavour to remove ob-
(Continued on page 587)

Nuclear Information : Complexity, Handling and Transfer

M.K. Dhirendra Rao*

Nuclear Literature—Volume and Complexity

Nuclear science is one of the most extensive fields of natural science if we take its umbral and penumbral areas into consideration. Extensive and intensive research in nuclear field in the post-world war has led to incredible proliferation of nuclear information. The rapid advances in nuclear field has resulted in publication of about 85,000-90,000 articles/papers, technical reports, patents, theses, books etc. per year. A conservative estimate of the total number of scientific and technical publications today itself is 2.5 million.

Nuclear information originates in many languages, viz. English, Russian, French, German, Spanish, Japanese etc. The forms of publications in which these appear are also very wide, namely, journal articles, technical reports, theses, patents, etc. Further

nuclear physics has found new vistas in Chemistry, Engineering, Medicine, Environmental & Earth Sciences, Material Sciences etc. thus increasing its interdependence and complexity.

Bibliographic Control of Nuclear Literature

By the middle of twentieth century, in spite of international abstracting and indexing journals like Physics Abstracts, Chemical Abstracts, Biological Abstracts, Referativny Zhurnal, etc, it became imperative to start exclusively Nuclear Science Abstracts (NSA) by the U.S. Atomic Energy Commission to cover Nuclear Science and Technology comprehensively. NSA after serving the scientific community for a long period from 1948 to 1976 ceased publication when INIS Atomindex took over the job. Table-I gives nuclear literatures coverage by NSA and INIS Atomindex.

TABLE-I

Coverage of Nuclear Science Literature by NSA and INIS Atomindex—A Comparative Study

Year	NSA	INIS Atomindex	Remarks
1970	53080	4053	First year of INIS Atomindex
1971	60298	10425	Annual rate of growth was maintained at 100% or more
1972	60848	20862	
1973	62137	56757	
1974	66236	63669	Almost catching up with NSA
1975	66208	63296	
1976 (June end-NSA ceased Publication)	3264	30617	No significant change in INIS Atomindex indicates that steady state operation is being approached.
1976 (Dec. end)		60478	
1977 (Sept. end)		51618	

National Information and Documentation Services/ Systems in Nuclear Science & Technology

1. Technical Information Program, United States Energy Research and Development Administration (USERDA), Oak Ridge, USA.
2. Central Research Institute for Information, Technical and Economic Studies in Nuclear Science and Technology Moscow, USSR.
3. Le Service de Documentation, Centre d'Etudes Nucleaires de Saclay, Commissariat a Lenergie Atomique (CEA), France.
4. Zentralstelle fur Atomkernergie Dokumentation (ZAED), Karlsruhe, Federal Republic of Germany.

5. Division of Technical Information, Japan Atomic Energy Research Institute (JAERI), Tokai, Japan.
6. Library & Information Services, Atomic Energy Research Establishment (AERE), Harwell, United Kingdom.
7. The Euratom Nuclear Documentation System (ENDS) of the Centre for Information and Documentation (CID), European Atomic Energy Community (Euratom), Luxemburg.

International Information Systems in the Field of Nuclear Science and Technology

1. U.S. Nuclear Information System: The United States Energy Research & Development Administration (USERDA) is operating a compre-

*National Physical Laboratory, New Delhi.

hensive nuclear information system to support its own research programmes and to meet its responsibility of dissemination of nuclear information to the world.

2. **International Nuclear Information System (INIS):** INIS is the only truly international information system in the field of nuclear science and technology established by the International Atomic Energy Agency (IAEA) in Vienna, Austria, in April, 1970.

International Nuclear Information System (INIS)

INIS is a computer-based decentralised international mission-oriented nuclear information retrieval system created jointly by the International Atomic Energy Agency (IAEA) and its Member States (which are 65 in number at present). The primary objective of INIS is to improve and expedite exchange of nuclear information at global level and to avoid wasteful duplication of research efforts in the field.

Structure, Design and Characteristics of INIS

INIS has adopted a very pragmatic approach of covering the world's nuclear literature output by decentralising the input, centralising the processing work and decentralising the output utilisation.

1. Input to the System

(a) Responsibility of the Input

The participating member States/International Organisations are responsible for the collection and selection of scientific and technical literature produced in the respective countries or geographic region, identify those items falling within the subject scope of INIS and process the information in accordance with the agreed standards and rules of INIS for inclusion in the INIS Data Bank.

(b) Type of Input

The system covers both conventional (books, periodical articles) which are easily obtainable through commercial channels and official publishers and non-conventional (conference preprints, technical reports, patents) which are not easily available through normal channels.

(c) Selection of the Input

The selection of the input has to be made by the respective inputting centre on the basis of the following three criteria :

- (i) **Geographical criteria:** Is the document to be inputted falls within the geographical area to which the input unit is responsible;
- (ii) **Subject criteria:** Does (all or part) of the document to be inputted falls within the proposed subject category of INIS;
- (iii) **Quality criteria:** Does the information content of the document to be inputted to the system is worthwhile? Here the quality indicators are :
 - amount of new information contributing to overall scientific knowledge;
 - durable or ephemeral character of information (particularly for progress reports);
 - general or specialised character of information;
 - scientific character of augmentation;

- reputation of the author or sponsoring organisation;
- standard of the journal in which information is published;

(d) Physical Media of the Input

There are four media for the input; namely worksheets, paper tapes, magnetic tapes and OCR mode. The first media is used where the necessary computer facilities are not available.

(e) Standardisation in the Input

The standard operating rules of INIS are contained in a series of INIS Reference Manuals comprising the rules, formats, codes, authority lists, etc. on which the system is based. These currently consist of 16 documents and are in accordance with standards and codes developed by the International Organisation for Standardisation (ISO) and UNISIST Reference Manuals to ensure widest compatibility.

INIS Reference Series

IAEA—INIS -1 (Rev. 3)	INIS: Descriptive Cataloguing Rules
IAEA—INIS -2 (Rev. 2)	INIS: Descriptive Cataloguing Samples
IAEA—INIS -3 (Rev. 4)	INIS: Subject Categories and scope Descriptions
IAEA—INIS -4 (Rev. 1)	INIS: Instructions for Submitting Abstracts
IAEA—INIS -5 (Rev. 3)	INIS: Terminology and Codes for Countries and International Organisations
IAEA—INIS -6 (Rev. 10)	INIS: Authority List for Corporate Entries and Report Number Prefixes
IAEA—INIS -7 (Rev. 1)	INIS: Magnetic and Punched Paper Tape Codes and Character Sets
IAEA—INIS -8 (Rev. 1)	INIS: Paper Tape Specifications and Record Format
IAEA—INIS -9 (Rev. 2)	INIS: Magnetic Tape Specifications and Record Format
IAEA—INIS-10 (Rev. 1)	INIS: Transliteration Rules for Selected Non-Roman Characters
IAEA—INIS-11 (Rev. 6)	INIS: Authority List for Journal Titles
IAEA—INIS-12 (Rev. 2)	INIS: Manual for Indexing
IAEA—INIS-13 (Rev. 13)	INIS: Thesaurus
IAEA—INIS-13 (Rev. 10)(F)	INIS: Thesaurus, Version française
IAEA—INIS-13 (Rev. 10)(D)	INIS: Thesaurus Deutsche Ausgabe

IAEA—INIS-14 (Rev. 1)	INIS: Description of Computer Programmes
IAEA—INIS-15 (Rev. 0)	INIS: Self-Training Manual for Descriptive Cataloguers
IAEA—INIS-16 (Rev. 0)	INIS: Subject Indexing Samples

2. Central Processing

The INIS Headquarters at Vienna exercises central control and coordinates the works of national INIS centres. It is responsible for :

- checking and correcting the input received from the various input centres.
- conversion of worksheet, paper tape etc. into magnetic tape form.
- merging the information and subsequent generation of products which is sent to the Member States for further utility and dissemination.

3. Output of the System

INIS generates and distributes the following important multi-purpose by-products :

(a) INIS Atomindex

It is a fortnightly computer produced abstracting service provided with personal author index, corporate entry index, subject index, conference index and report, standard and patent number index.

(b) INIS Magnetic Tape Service

It contains bibliographic details and subject descriptors for all the items reported to the INIS. Retrieval of items by any of the various parameters, such as subject, title, author, institution, country of origin, date of publication, form of publication, etc. is possible.

(c) Non-conventional literature on Microfiche

About 25% of total items reported to INIS are reports, conference preprints, patents, theses etc. which are made available, against payment, in microfiche form only.

Nuclear Research and Applications—Indian Scene

At first, in India, the efforts were directed more towards reactor technology for creating reactors, both research and power for peaceful uses of atomic energy. But front-line research in experimental nuclear physics in India was very difficult due to want of big accelerators. In theoretical physics no such impediments are envisaged but still it demands data churned out by big machines. In the recent past, the Department of Atomic Energy (DAE) has been successful in equipping ourselves with worthy accelerators, viz. 60 MeV Variable Energy Cyclotron (in Calcutta). This gave boost to nuclear research activities in India. Some of the Indian Institutions engaged in nuclear research and applications are: Bhabha Atomic Research Centre (BARC), Bombay; Saha Institute of Nuclear Physics, Calcutta; Tata Institute of Fundamental Research (TIFR), Bombay; Bose Institute, Calcutta; Indian Institute of Technology, Kanpur; Indian Institute of Technology, Kha-

ragpur; Indian Institute of Technology, Bombay, University of Delhi, Delhi; Panjab University, Chandigarh; Aligarh Muslim University, Aligarh; University of Bangalore, Bangalore; Andhra University, Waltair; Dibrugarh University, Assam; and Banaras Hindu University, Varanasi.

India's Quantum of Input

According to an estimate, about 2500 items (approximately 3% of the total literature published in the nuclear field) falling within the INIS subject scope originate in India annually which is more than the inputs from all other developing countries put together. Table-II gives India's input to INIS.

TABLE-II

India's Input to INIS Data Bank			
Year	Indian Input	Total World Input	% Input of India to INIS Data Bank.
(Cumulative)		(Cumulative)	
1970	151	4,053	3.7%
1971	386	14,478	2.6%
1972	1000	35,340	2.8%
1973	2230	92,097	2.8%
1974	2980	1,55,765	1.9%
1975	3980	2,19,062	1.8%
1976	1980	2,79,541	1.7%
1977	5980	3,33,226	1.8%
(upto Oct.)			

The average annual input contributed by Indian to the INIS Data Bank is 2.3%.

INIS Operations in India

Our national inputting centre to INIS is Bhabha Atomic Research Centre (BARC), Bombay. The work of INIS group in Library & Information Services of BARC consists of the following tasks:

- To collect nuclear literature published in India and identify those items falling within the subject scope of INIS. The INIS reference manual, subject categories and scope description, helps to identify and categorise a particular item of literature. This publication provides the framework of subject scope and also a subject classification scheme based on alphanumeric notation. For each subject category, a detailed scope description with necessary cross references are given.
- To process the identified and selected items of literature according to prescribed rules in the form of worksheets. This consists of categorising, abstracting, indexing and preparation of bibliographical description of the items selected.
- To prepare the input in machine-readable form, i.e. paper tape. Since February, 1977, the input is being sent in OCR mode to INIS Section, Vienna.

Utilisation of Output Products

India utilises the output products distributed by INIS by subscribing to 10 air-mailed copies of

(Continued on page 578)

National Sports Policy

B. N. Barua*

The history of the National Sports Policy is of very recent origin. The Kothari Commission (1964-66) merely touched the subject. "It must be emphasised that education contribute not only to physical fitness but also to physical efficiency, mutual alertness and development of certain qualities like perseverance, team spirit, leadership, obedience to rules, moderations in victory and balance in defeat". Thereafter the same subject was discussed in the National policy on Education, adopted in the Parliament in the year 1963 as follows:

"Games and sports should be developed on a large scale with the object of improving the physical fitness and sportsmen of the average students as well as those who excel in this deptt, where playing fields and other facilities for developing a nation wide programme of physical education do not exist, they should be provided on a priority basis." The later was obviously more specific than the former. But, neither of the above has spelt out many of the aspects as it should have been.

Of late there has been a lot of discussion in the press and the platform regarding the improvement of games and sports in the country. Such discussions have been provided mainly when the national team do not fair well or met with humiliation in the International arena like Olympic games, Asian games, etc. and it was felt that the Government should not remain unconcerned or silent spectator while the standard games and sports continues to fall and only national humiliation brought home by visits abroad. At the instance of the Govt. of India, the All India Council of Sports, the highest advisory body on games and sports have drafted a National Sports Policy. This is of course long overdue. The draft is currently being circulated to all sports loving public in general and concerned organisations and bodies in particular. It is necessary that the context of the National policy should be discussed threadbare.

Although the sports and games form a part of the common programme of education which is a State subject, it is felt that consensus is necessary amongst the State Govt. State's Sports Council, All India Council of Sports, Govt. of India and the confidence of the National associations/federations for the evolvement of the National Policy. No doubt the competitive aspect of amateur sports in our country at national and international level is the prime responsibility of the National Olympic Committee and the concerned federations, the role of the Govt. so far was confined generally to provide coordination make finance available, as and when necessary. Without affecting the autonomy

of such national level federation/association the Govt of India and the State Govts have laid down certain guidelines to the National and State level bodies. These guidelines are generally acceptable to majority of Associations/Federations although some others appear to have reservation on these guidelines. In practice, it is seen that acceptance of these guidelines have improved the administration of such national and State level association/federation by including fresh blood and improved book-keeping etc., although laudable objectives of fair selection appointment of qualified coach and such other measures are yet to be fulfilled. At the same time these guide-lines involved the moral responsibility the Governments of liberal financing of such organisations where lack of funds was the main concern. The draft national policy has rightly observed that such guidelines should be effectively pursued, as public fund and National prestige are both involved.

Development of sports and games involves considerable finance. The present annual expenditure of our country is Rs. 2.50 crores per annum. The tentative 6th Plan allocation for sports and physical education in the central sector is to the tune of Rs. 7.5 crores, and annual non-plan expenditure is only Rs. two crores. Therefore, it appears that the central expenditure on physical education and sports is less than 1.2% of the expenditure on education and of the States, the less said is better. It is estimated that total per capita expenditure in the country works out to less than 4 paise in a year which is perhaps the lowest in the world. In countries like USSR, USA, GDR and smaller countries like Japan, Thailand, Iran the per capita expenditure is considerably higher. Besides in the developing countries a considerable number of private organisations taking initiative and pride in the development of sports and games. In our country such exercise is rather rare, and where any initiative is taken is in the form of constituting a club, where recognition to achievement in sports and games is rewarded by offering employment and the beneficial aspect of this gesture is often found to be questionable. No wonder the Olympic and Asian medals are monopolised by the developed countries or developing countries like Japan, Korea, Thailand who puts up a better show than us. We get demoralised when we lose to a tiny island like Ceylon in the prudential cup in cricket.

The National Sports Policy has rightly referred to rouse the sense of sports consciousness amongst the public in general and the guardians and teachers in particular. It is of course lamentable that the sports consciousness in the desired level has not yet been noticed. Although no proper survey has been carried out about the infrastructural facilities available in various levels, there is no doubt that equipments of acceptable quality could be produced and available at reasonable price in our country. A recent sample survey in our State has revealed that not a single school of the State have adequate number of sports equipment for athletics. Although a tartan track or an austroturf, we can hardly afford,

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there should be no reason why we cannot provide adequate number of shotput, discuss etc. to the students. Another important aspect for the development of sports and games duly discussed in the draft plan is the involvement of the masses, and to broad-base the games and sports to tap the talents in the rural areas. So far no serious effort has been made to involve the grass roots in various disciplines.

The draft national policy recognises the right of every citizens to participate in each and every games and sports and recreational activities. The first objection is to inculcate sports and make health consciousness amongst the people, for regular participation in games and sports and to make nation healthy and strong. The second objective is no less laudable it is to earn the place of pride in the international sports competition.

The strategy of the national sports policy recognises the need for regular physical exercise from early childhood to advanced age find a clear assertion that sports must be made a compulsory subject in all schools and colleges and also introduced as regular recreation in factories and industries. The strategy proposed to be executed through a net work of rural sports centres to be set up by panchayat department with the target of atleast 2000 boys and girls participating regularly in some activities of sports by 1983. It is no doubt a time bound programme. The policy also includes the programme for sports festivals to be held at district Headquarters once a year and in State capital once in two years. The sports policy rightly recognises the emphasis to be given to indigenous, traditional and rural sports like Kho-Kho, Kabaddi, Wrestling etc, and for the propagation of Yoga. In executing such mass improvement and time bound programme the mass media like TV, AIR and the press must play a constructive role. For bringing out talents, the policy envisages that the various national/State federation Sports Council etc. and other organisations must organise competition at various stages and age-groups. The reservation of open space for the posterity have also been rightly pointed out. It is also proposed that the All India Council of Sports and their counterpart in the States must play a positive role and be clothed with more power and autonomy in their field to advice the Govt. in all matters relating to sports and physical education etc.

The other important features of the national sports policy have a proposal to hold the national games once in every two years catalogue on minimum infrastructural facilities required to be provided in the villages, blocks, districts, State and National level, the mode of preparation for future international competition, special emphasis required to be provided for backward and tribal areas, the important part required to be played by the industries and public sector undertakings etc., the incentive in the form of scholarship etc. for sportsmen, a welfare fund for the sportsmen, reservation of seats and jobs for sportsmen in various institutions etc. These suggestions are more or less in operation and it requires to be continued, and broad based.

Conclusion

A critical analysis of the draft sports policy reveals snag of the estimate of financial implication and the extent of physical involvement has nowhere been projected. The Govt. of India will subsidise in the national level in certain schemes only and the rest of the scheme proposed to execute through the State Govt. channelling fund through sports Council. Although sports being a part of education, is a State subject. It cannot be denied that the Central Govt. has an important part to play. The sources of income of the State Govts being in-elastic they shall not be able to make necessary budgetary provision for such purpose.

The National Sports Policy also has not taken into consideration how easily the quality sports goods and equipment can be made available to the children at reasonable price.

Another important aspect overlooked is the cumbersome process of the central sales tax imposed on sports goods which obviously increase the cost of goods and equipments. The sports medicine is a new subject given adequate importance in the other countries. In our country we have not paid adequate attention in this regard and no specialised institution is opened for this purpose. Another important feature which the policy has not examined in details, whether all sorts of sports and games currently being played in the country like Cricket, Football, Volleyball, Badminton, Tennis, Wrestling, Cycling, Golf etc. and propagation of indigenous games are continued to be promoted and sponsored by the State. Some of these games are costly in nature and may not be suitable in our country. Although there is no bar for organisers to promote all sorts of games and sports, it is a matter for consideration in depth whether the State will patronise all the games and sports which we can ill-afford or be selective and adopt certain popular games having mass appeal like football, hockey and games of individual process like athletic events. □

[Courtesy : The Assam Tribune]

Nuclear Information

(Continued from page 576)

Atomindex, plus 2 copies received free of charge, and abstracts on microfiche of all the items. The printed Atomindex is widely circulated for speedy dissemination of information. Facilities for reading and reproducing enlarged copies of the abstracts in microfiche form are available. Non-conventional literature available in microfiche form in the INIS Clearinghouse is procured in response to individual requests. However, on account of the non-availability of a compatible computer in BARC, for that matter in the Bombay region, it has not been possible so far to utilise the INIS magnetic tape for starting services such as SDI, retrospective literature search etc. As an interim measure, arrangement was made until May, 1976 with the Centre for

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Education of the Engineers

A.C. Gandhi*

"Planning is a charter for an orderly progress. In the Education of the Engineers a number of factors should be taken into consideration in a developing country like ours. It should be linked with the mainstream of our planning. Engineering is not a science but is rather an application of science. According to the definition adopted by the Engineer's council for professional development, Engineering is the profession in which a knowledge of the mathematical and natural sciences gained by study, experience and practice is applied with judgement to develop ways to utilize economically the materials and forces of nature for the benefit of mankind".

The purpose of the scientist is to add to mankind's inventory of systematic knowledge and to discover universal laws of behaviour. The purpose of the engineer is to apply this knowledge to particular situations to produce products and services. To the engineers knowledge is not an end in itself but is the raw material from which he fashions structures, machines and processes. The engineer is helping the people to satisfy their wants.

Modern civilization rests to a large degree upon engineering. Most of our activities are directly or indirectly related with engineering. Engineering provides devices for cultural and economic improvement of the human race. In short, engineering has become an essential ingredient in all walks of life.

It is true that the scientist and the engineer form a team that paces modern technology. In science lies the foundation upon which the engineers build toward the advancement of mankind. With the continued development of Science and the widespread application of Engineering the standards of living may be expected to improve. These help to broaden the scope of engineering and scope of Engineers. A knowledge of Economics, Sociology, Psychology and the fine arts is useful and essential for the engineers.

Thus for successful application of engineering, the engineering syllabus should cover all the above mentioned points. This will broaden the base of engineers and there will be no round pegs in square holes. The creative engineers have to overcome not only physical limitations but they have to accept responsibility for the success of projects involving human and economic factors.

These factors lay stress upon the fact that the engineers must be acquainted with social sciences. They must be acquainted with principles of Economics, Sociology, Psychology. It has been rightly observed that never before in the history of India was there a greater need of energetic, enterprising and farsighted managerial talent. We expect a

change in the economic and social structure in the country. The application of engineering will be the agent of change. The engineering education cannot afford to neglect the process of change in socio-economic development. To fulfil the needs of country we cannot afford the engineers to keep aloof from the society in which they live. Society is affected by the successful application of Science and Technology. In application of engineering the engineers have to identify the problems. He has to take into account social factors and development.

The pattern of teaching in most of the engineering colleges does not suit the above requirements. They are not in conformity with the broad based engineering curriculum which is the need of the time.

In our country there is no uniform policy of teaching the social sciences. Each institution has its own policy. There is no guiding principle behind this. Under such circumstances, it is high time that first the objectives of Social Science teaching in engineering education should be well defined.

The report of the UGC, ICSSR study team on the role of social sciences in education for agriculture, engineering and medicine recommend the following objectives:

1. To increase the engineering student's awareness of the economic, social and political situation in the country and to promote the development of technology appropriate to these conditions.
2. To equip students to cope with administrative and managerial demands of their environment.
3. To promote the development of knowledge in the interface areas of technology and society and to develop social sciences especially those of their sub-branches that interact with physical sciences and technical education.
4. To encourage the student to develop himself as a person by gaining through the study of social sciences a deeper understanding of human nature and a greater degree of social awareness. □

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Internal Auditing as a Subject for Study

D. Amarchand*

Internal auditing is emerging as an effective form of control over all other internal controls in an organisation. The principal factor in its emergence is the larger size of the organisation. The managerial tasks have increased in employing thousands of people and conducting operations from widespread locations. Defalcations and improperly maintained accounting records are the main problems under these circumstances. The external, statutory auditor comes into the picture quite some time after the closing of the accounting year and does a rather post mortem work and in fact signs the audit report after the directors have signed. His utility for internal control, therefore, is not much. Hence internal auditing is the new concept gaining acceptance with the modern managements. The introduction of electronic data processing and mechanised systems have added yet another dimension to the work of the internal auditor. Any large business organisation—in private, public or co-operative sector—requires a system of internal auditing firmly established as a part of its internal control system.

The Institute of Internal Auditors, USA, the professional society of internal auditors has officially defined internal auditing as “an independent appraisal activity within an organisation for the review of accounting, financial and other operations as a basis for service to management. It is a managerial control, which functions by measuring and evaluating the effectiveness of other controls.” Thus it emerges as a special branch of the broad field of accounting, utilising the basic techniques and methods of accounting and auditing.

Most of the organisations in India have introduced internal auditing in one form or other and the internal auditor is assigned different roles in the internal control system of the organisation. Similarly the concept has been understood in different ways. The educational and training background of the persons involved in internal auditing are also varied. A sound theoretical knowledge of the principles of internal auditing may be lacking with many of them. As a result, the objectivity with which the job is to be done and the perfection with which the techniques are to be used are found wanting with many practitioners.

Academics in association with the practitioners can greatly help the profession of internal auditing to develop. Besides introducing the subject of internal auditing along with accounting, short programmes

can be conducted for the benefit of those who are already serving in the internal audit departments.

The curriculum for such a course may provide for a sound theoretical base in terms of the principles of internal auditing, along with the techniques of internal auditing. To give a wider coverage, special areas like electronic data processing audit may be included. Besides, an introduction to cost audit will make the course still more useful and comprehensive.

The Department of Commerce of the University of Madras has planned to launch, very soon, a short programme of providing a study course for the benefit of the practising internal auditors and aspirants to the profession. This will be done in collaboration with the Madras chapter of the Institute of Internal Auditors. The subjects covered in this course include Principles of Internal Auditing, Techniques of Internal Auditing, E. D. P. Auditing and Cost Auditing.

The overall objective of internal auditing is to assist all members of management in the effective discharge of their duties, by furnishing them with objective analysis, appraisals, recommendations and pertinent comments concerning the activities reviewed.

In actual practice, the internal auditor is usually entrusted with three types of responsibilities. These are as follows: (i) compliance of company policies, rules, procedures, good business practices, generally accepted accounting principles and governmental regulations; (ii) verification of records, reports and assets and liabilities; and (iii) evaluation of the internal control system as to check its adequacy and utility to management. In the process of executing these responsibilities the internal auditor ensures that the controls are so effective that irregularities will not go undetected for a prolonged period. Both frauds and errors (of omission and commission) are brought to light at the earliest.

The modern concept of internal auditing is that it has a positive contribution to make in the running of an organisation. It has been aptly said that internal auditing is what the chief executive would do, if he had the time and the know-how. As an example of the constructive role of internal auditing may be mentioned the following: detecting wasteful/inefficient/sub-optimum use of resources; reviewing the appropriateness of policies/procedures to the prevailing environment; and reviewing the responsiveness/adaptability to changing circumstances. □

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Role of Libraries in Universities

Modern universities are expected to acquire, interpret and disseminate knowledge in the light of needs and requirements of academicians and laymen.

The criteria for ranking universities will be usually the facilities provided for teaching and research, reputation of teachers and scholars, their contribution to knowledge and association with society for upliftment of the standard of living.

Each university tries to carry out its functions effectively. The main functions can be acquisition of knowledge, interpretation of knowledge teaching—research and extension services. In order to carry out these functions effectively and efficiently the university has to work like a system. The digestive system, the respiratory system and the circulatory system co-ordinate to maintain the health. So also the various systems of a university—the administrative branch, the finance branch, the library etc. to carry out the objectives expected of the university. Hence the success of the parental organisation rests on the proper co-ordination and co-operation of its sub-systems.

Taking individually, in order to realise the objectives of the university, the library has its own functions well delineated—namely educational, informational, research and recreational.

Libraries attached to academic institutions have to pay more attention towards the educational needs of the community. They have also a significant role to play for laymen and those who cannot go for higher studies because of various reasons.

The libraries are deemed to be an informal self-education centre and librarians as teachers who provide materials for reading and learning from the point of illiterate they venture to provide services through rapport between readers and themselves. They also get to know the requirements of the readers. They do not stop at that but continue to help the information retrieval after acquiring the continuous feed-back from readers whether their needs are satisfied and then attempt to collect all relevant information and supply them to the readers.

Library provides opportunity for extension of knowledge. Unlike class lecturers and correspondence course tutors or text-book centred education purposes the librarians are not to make a student search and research in all fields of interest. Libraries acquire, organise and disseminate knowledge in all subjects and the depth of knowledge of the librarian must therefore be intensive. Such programmes must be made easily accessible through readers advisory councils. Reference librarians help students in preparing the assignments and seminar papers by means of supplying reading lists indices, periodical articles, reference volumes lists of current publications and arrivals. Thus the readers' curiosity will be excited and reading habit inculcated in them. The responsibility of providing exact information to the readers

and judging their interest rest on the shoulders of reference librarians. They must be abreast of the modern as well as ancient wisdom and to keep a live mind a reference librarian must actually be walking encyclopaedia. He helps the faculty members by supplying documentationists, bibliographies, indices of recent arrivals and so on.

Text-books

Text-books prescribed for the courses and classic works are to be provided to the students without any difficulty. It is the role of the active library staff to arrange formal lectures within and outside the library on these books or create that types of interest by securing eminent scholars, critics and authors to take up extension programmes and provide an opportunity for exchange of views and encourage in all scholars an aptitude for critical analysis.

Information is essential for decision making. We do need information in all walks of life and in our day-to-day life. Information is power and knowledge is property. People ponder over the daily news in order to be aware of current trends in social and political fields. Libraries following this natural objectives have to consider the imperatives of dissemination of news and information expeditiously to the public at large through all branches of mass media the radio, TV, newspapers etc.

In view of information dissemination and social harmony reaching the largest number and in most cases the poorer sections of the people, the universities, the municipalities and civic bodies must start reading rooms and set up reading circles in thickly populated centres of the community. These centres should buy newspapers, magazines and the like and must help the readers to get all relevant information without delay. The main intention is to provide day-to-day news and an opportunity to the people of different educational background and customs and practices and professions to exchange their thoughts and views on various topics.

University extension services have to move to the doors of the public (particularly rural areas) by means of extension programmes. Here eminent scholars of the universities will be requested to deliver lectures and to train the rural folk in agricultural and industrial techniques and bring out in book form all the data the people will need in simplified form. Regular seminars, conferences and exchange of references will also help specialists and students to understand the problems of the people.

Before commencing research on any topic one should know what has been done so far, what is going on in the field and thereby he can avoid duplication of effort and money. It will also help the researcher to modify the research topic to point to the immediate requirement without losing sight of the long-range objective. For this venture, retros-

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Need for Doing without Degrees

Navin Chandra Joshi*

The Draft National policy of Education 1979 states that the highest priority must be given to free education for all upto the age of 14 as laid down in the Directive Principles of the Constitution. Education upto this stage should be general and not specialised and should give pupils a confident command of language and subjects and a scientific attitude. The Policy further points out that secondary education should be comprehensive both to be terminal for those who do not want or cannot proceed for further education and to have a strong academic foundation for higher studies for those who show intelligence and aptitudes for that education. However, in the present situation, this is just not the case.

Today, a new academic session draws thousands of aspiring youngmen and women to the portals of our universities without any clear idea as to why they seek higher education. The vast majority of them, however, come not for any higher education as such but for acquiring the dubious possession of a university degree. For this, the youthful aspirants are not so much to blame as the socio-economic structure which puts a premium on the degree as a passport to all kinds of employment. Much of what is happening in the academic world seems oriented to devalue the concept and idea; of higher education into the cheap, commercial commodity called the university degree.

Do students come to our universities in order to learn something? This is a question which has eluded the 'educated' as well as the 'educators'. In fact, a majority of them are really 'refugees' who ask for shelter having no other place to go. So great is the craving for a degree that no price is considered too high. And so low is the longing for knowledge that no measure of effort seems worth its while. The degree holder is finally turned over to the second phase of his life as a marketable commodity in the employment market. He is not bothered with what the market has to offer. What the society gives, he must take. What the rules ordain, he must follow. The social structure pushed him to the degree course. He never pulled himself to it or, for that matter, to the content of education that the degree is supposed to represent. Degrees have been debased as a result of various kinds of malpractices of which the latest at the higher level is the writing of a Ph.D. thesis by proxy. The U.G.C. has not been able to ensure minimum standards for examinations leading to degrees nor has any equivalence been established on a nationwide basis. The

consequence has been that degrees awarded by universities do not serve as crystal clear diamonds but as passports of doubtful merit unless proved otherwise.

In India, almost all white-collar jobs require the possession of degree as a basic qualification for entry. This is true of jobs both in and outside the government. The vast majority of office jobs has been equated to the university degree qualification. The clamour for degrees rises in proportion to the pressure for entering the clerical services. And the same degree is the basic requirement for entry into higher services. Thus, posts which have no comparison in any respect with each other have a common minimum qualification for entry—the university degree.

The intriguing position is that whoever wants to earn a living must attend a college to acquire a degree. May be, clerical posts are linked to a degree because the quality of the degree holders has been going down. It is true that the standards of education, both at lower and higher levels, have visibly fallen. How is it that the standards have fallen and are falling year by year when our educational institutions, as a whole, are better equipped today than ever before, when more qualified people are available for teaching and when modern scientific methods can be had for imparting education? Many educational reforms have also been put through but the deterioration in standards is not being arrested. The explanation appears to lie in the unwidely number of students which our schools and colleges find impossible to hold. In the world of economics, there is an optimum level or size, beyond which diseconomies set in. Similar is the case when the intake of students becomes disproportionate to the optimum capacity of an educational institution. Our class rooms are vastly denser. A university teacher has to shout at the top of his voice to be heard by the back-benchers. Thus, his performance becomes a test of his respiratory system, not the cerebral mechanism.

There seems to be no alternative to an absolutely restrictive policy of admission to higher education in all the faculties. The degree has to be delinked from the usual run of white collar jobs. For this, a nationwide system of recruitment should be devised for clerical and other comparable jobs within and outside the government. Candidates who have passed the higher secondary or equivalent examination should be given specific training for a year or so, so that the basic knowledge required for jobs of this nature are imparted to them. The training would include office

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procedures and rules, drafting of letters, typing, shorthand, handling of office equipment and the like. This training should be on an extensive scale with the least restriction and preferably without any fees. Such a scheme would produce candidates for clerical and similar jobs, who would be capable of much higher performance than raw degree holders. The logic of the scheme can be extended to areas other than clerical as well.

We must appreciate that higher education is still a luxury in India but even the limited resources and manpower are being frittered away leading to a galloping devaluation of standards and academic integrity. While politicians have often played with the ebullient fervour of youth for their own narrow ends, both teachers and parents have, of late, been taking the line of least resistance and disowning their responsibility for the welfare of their wards. Students are a privileged community, free from the anxieties of assistance and much less exposed to the realities of life. No doubt, they have their own problems but these are far less corrosive than those afflicting millions of wage earners. While they should naturally take an interest in events around them and also try to improve academic life and its content, strikes and ghettos on the slightest of provocations only ruin their careers and cost the nation dearly. It is better, for example, not to produce a doctor who does not know how to administer an injection. Likewise, such engineers should not be produced if they construct

bridges which collapse like a house of cards in no time. It is quite dangerous to give an incomplete or faulty education in any discipline of life. If this situation cannot be improved, the alternative, however desperate it may sound, will be to close down all the seats of higher learning until there is a greater appreciation for learning itself.

The country does not need, nor can it afford, an ever increasing army of clerks. The specific training for office jobs should cover only such a number as can be absorbed into employment within a reasonable period. The rest will have to be diverted to agriculture, industry, technical training, rural works and similar areas of activity. This will enable them contribute to the creation of national wealth at a stage in their life when frustration and disillusionment would have set in. Once the educational structure as a whole is geared to the needs of those who really seek and deserve the intellectual light, it would be easier for our society to progress in qualitative terms. A policy that accepts this logic would also help the government's employment-oriented programmes, which now receive only sporadic, often inconsequential attention. Without a basic change in the strategy of educational planning, the outcome is bound to be bleak. This seems, therefore, the right time for declaring that the university degree is not required for clerical and comparable jobs, for putting into effect a training scheme for these jobs and simultaneously for restricting admission to higher education. □

Role of Libraries in Universities

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pective bibliographies, review documents and literature survey are to be prepared by the library staff. To prepare such standards documentation products, the staff must have a sound knowledge of the subject and various institutions working in the field and allied fields. They have to take the help of information analysis centres, which supply on demand critically evaluated information for research.

Current publications and documentation products should be made accessible to the research scholars by means of computers installed in a co-operative venture. Libraries of the same kind i.e. university libraries and nearby research institute libraries have to function as a network. They can exchange their documentation services products prepared at one library with all the participating libraries through photocopy techniques. The selective dissemination of information is the matching of readers' terms with that of information in current publications. The venture can be successful and economical if computers are installed centrally.

Research

Developed universities have taken active role in mission oriented research where scientists in different subjects and background come together to work and achieve a common goal. For example, space research as chemists, physicists, engineers and others

working in different fields come together for the ultimate goal of the Satellite communication system. In this hard task, research librarians act as scientists providing information for research problems and build up understanding among the scientists of different fields.

Librarians can help immensely in presenting research articles and thesis as they know referencing, abstracting etc. that is to say right from the beginning of topic selection, presentation of synopsis upto the binding up of research work. Therefore, knowledge of research methods is a felt need of scientists in libraries.

University libraries should also cater to the needs of recreation. It is wrong to conceive the functions of libraries as merely educational, informational and research. Close association with the culture of the society is maintained by means of socio-cultural programmes. Novels are, therefore, essential and moreover, paintings, chart display, magazines have a place in the libraries. In addition to this, the library staff should take initiative in carrying out dramas, film shows which provide common platform for the faculty and students in different fields come together and exchange thoughts to build up good human relations. □

[Courtesy : Deccan Herald]

Seminar and Report on Mohamed Ali in Indian Politics

Nazar Burney*

The Khilafat leader and one of the Ali Brothers Maulana Mohamed Ali was born on December 10, 1878 at Rampur (Uttar Pradesh). The year of 1978/79 was specified as the Maulana Mohamed Ali Jauhar Birth Centenary Year. In the second week of last December a postage stamp was released by the then Prime Minister Morarji Desai in commemoration to the memory of the Maulana. The Delhi Municipal Corporation decided to honour the memory of the Maulana in its way. It renamed the Okhla Road as the Maulana Mohamed Ali Jauhar Marg. The Jamia Millia Islamia founded by Maulana Mohamed Ali is located on this road.

Pakistan also celebrated the birth centenary of Mohamed Ali at the national level. Pakistan Historical Society held an international seminar at Karachi from Dec. 15 to 19 last year and this way perpetuated the memory of the Maulana. The topic of the discussion at the Seminar was "Maulana Mohamed Ali: His Life and Time."

Since the existence of Jamia owes to an all out efforts of Maulana Mohamed Ali and Mahatma Gandhi, it was aptly expected that it would do something to perpetuate the memory of its founder. Financed by the University Grants Commission, the History Department of Jamia Millia Islamia organized a three-days' Seminar on "Mohamed Ali in Indian Politics" (Oct. 26-28, 1979). Vice President of India, Mr. M. Hidayatullah inaugurated an Exhibition on this occasion. It depicted the life and work of Maulana Mohamed Ali through a large number of photographs, books, letters and other personal belongings of the Maulana. The Exhibition arranged by Dr. Zakir

Husain Library of Jamia Millia Islamia was comprised nearly 300 photographs which attracted a large number of spectators. Inaugurating the Exhibition and the Seminar Mr. Hidayatullah symbolised the Maulana as a man of character and the champion of Hindu-Muslim Unity. He was of the opinion that the Maulana lived for the freedom of the country and die for the same cause.

Dr. Mushirul Hasan, the director of the Seminar was optimistic enough about the Seminar and he stated that the Seminar would highlight all aspects of Mohamed Ali's career. But as a matter of fact the Seminar failed to do so. Most of the speakers represented only one shade of opinion, i.e. Marxism. They could not impress the audience. Many aspects of the life of Maulana Mohamed Ali remained unexplored. According to Dr. Hasan Mohamed Ali was estranged from Gandhi and bitterly disappointed with the Congress.

Officiating Vice-Chancellor, Prof. Ziyaul Hasan Faruqi welcomed the delegates of the Seminar and said that Mohamed Ali's personality, his achievements, and his failures can be properly understood only if we keep in view the forces operating behind the historic developments in world politics in his times.

About 3 dozen delegates from all over the country participated in the Seminar. Most of the articles covered the contemporary political events specially the communal atmosphere that prevailed in the country at the time of Ali Brothers.

Shiela Sen in her article entitled "Muslims and Khilafat and Non-Cooperation in Bengal" remarked that the Khilafat failed to achieve unity in Bengal politics between Hindu and Muslim "actors". Rather it led to the development of district Muslim politics and

complete failure of Congress among Muslims in Bengal leading to a situation where no single Muslim could contest any election on the Congress ticket.

M. Kar of St. Edmund's College, Shillong (Assam) in his paper "Impact of Khilafat and Non-Cooperation Movement" said that "there is no doubt that large numbers of Muslims throughout the country were embittered and sullen and though the movement... has failed or secured but a partial success in the various items of its programme attempted hitherto, has in the towns seriously affected the lower classes and although its influence in the rural tracts generally has been much smaller, in certain areas of Bihar and Orissa, Bengal, United Provinces and the Assam Valley, the peasantry have been affected."

Narayani Gupta's paper "Rowlette Satyagraha in Delhi in its historical setting" revealed that the Home Rule League movement of 1917, a classic phenomenon of the period of transition, elicited response in Delhi from those rais who a generation previously would have been classed a loyalist collaborators. The Arya Samaj had begun to get support among the Delhi Hindus, specially the students of St. Stephens College from the eighteen-nineties. The appeal of Shraddhanand can be seen in this context for he first made a dent in Delhi as a friend of C.F. Andrews. But the Arya Samaj did not succeed in converting Delhi Hindus to the degree that was seen in the Punjab's towns. Where it really extended its influence was among the jats of the hinterland after 1912.

M. Raza Ansari Farangi Mahali read his article in Urdu named "Mera peer bhai..."

Amalendu De of Jadavpur University, Calcutta highlighted the

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*General Secretary, Adabi Sangam, New Delhi.

PAU holds paddy-thresher demonstration

The Farm Power & Machinery Department of the College of Agricultural Engineering of the Punjab Agricultural University arranged a Paddy-Thresher Demonstration at Bhundri, 25 km. from here, recently. Five leading thresher manufacturers of Ludhiana, Jullundur, Moga and Goraya participated in the function and gave on-the-spot demonstration of their respective thresher. Out of the five threshers put up for demonstration, two were of multi-crop type while the other three would thresh only paddy. A large number of farmers of the village keenly witnessed the demonstration.

Speaking on the occasion, Dr. J.C. Bakhshi, Director of Extension Education, said that the present shortage of local farm

the costly fuel and reduce the cost of working.

Non-traditional subjects to be taught in Vidyasagar Varsity

Non-traditional subjects like Rural Development, Horticulture Tribal Anthropology, Applied Nutrition and Marine Biology would be taught in the proposed Vidyasagar University in Midnapore. Twelve colleges in Bankura and Purulia districts, apart from in Midnapore may also be affiliated to this new university.

These have been recommended among other things by the Bhattacharya Committee appointed by the West Bengal Government to suggest the lines for 'integrated development' of the proposed university. The formation of the committee was at the instance of the University Grants Commission.

onwards.

The non-recurring cost for the university has been worked out to Rs. 10 crores. The non-recurring costs would be Rs 10 lakhs, in the first year and 30 lakhs, 50 lakhs, 80 lakhs and one crore in each successive year till the fifth. The Minister said that the UGC had agreed to grant the entire non-recurring expenditure.

Mass population education project approved

The Union Ministry of Health and Family Welfare has approved a comprehensive national 3-year time bound project for population education. The project is expected to cover half-a-million schools in the country through revised and improved curricula in the existing school subjects through co-curricular activities, visual materials and various mass media such as radio and television.

Mr. Rabi Ray, the Union Minister for Health and Family Welfare, made these remarks at valedictory address of the Regional Workshop on Innovative Structures and Approaches to Population Education which was jointly organised by the Unesco and the National Council for Educational Research and Training. The Minister said that the project would encourage and financially assist the States to translate and develop their own materials in the regional languages. The United Nations Fund for Population Activities was also being approached for the financial assistance to implement the project. The workshop confined its deliberations to population education in the formal schools and went into such details as development of curriculum and materials, the needs of teacher education and evaluation.

Madras to have a second look at the restructuring of courses

Mr. G.R. Damodaran, Vice-Chancellor of Madras University while presiding over the meeting of the Academic Council of the university recently pleaded for a closer look before restructuring the pattern of the BA and BSc

CAMPUS NEWS

labour was being met with the labourers from UP, Bihar and Rajasthan. Since these States were also coming up with their development programmes in agriculture and industry, the labourers from these States would not be available after some time. Dr Bakhshi told the farmers to adopt mechanical threshing as it saved their valuable time which could better be utilized for the seed-bed preparation of the next crop.

Dr. Bakhshi advised the farmers to carefully see the performance of these threshers and then select an equipment which suited them the best. He opined that multi-crop threshers were more useful to the farmers as they could thresh both paddy and wheat. Dr. Bakhshi further said that though there were 5 lakh tubewells in the State, their working efficiency was only 30 per cent. This low-efficiency needed to be improved to save

Mr. Dutt who heads the eight man committee submitted the committee's report to the Minister for Higher Education, Mr. Sambhu Ghosh. Mr. Ghosh told newsmen, that the Government would examine the report and draft a legislation on the setting up of the university thereafter. Mr. Dutt was present during the Press briefing.

The Committee which held a total of nine meetings in Calcutta, Midnapore and Kharagpur has tentatively selected a 143-acre khas land just outside the municipal limits of the Midnapore town as the site for the campus.

It is of the view that the university may be started from 1980-81. In the first year, the new university would get its examinations conducted by Calcutta University in the second year it would hold the examinations on the questions set by the Calcutta University and do everything on its own from the third year

degree courses. The proposal was referred back to the Syndicate for consideration. The Syndicate had earlier accepted the recommendations of the Boards of Studies with regard to restructuring the BA and BSc degree courses for the academic year 1980-81. The Vice-Chancellor wanted the principals and other educational experts to be consulted in the matter. A section of the teachers have also expressed strong resentment to certain portions of the restructured pattern especially those dealing with internal assessment and practical examinations. Some members pointed out that they were not in a position to conduct internal examinations as students would take law into their own hands.

New mining system designed

A system of coal mining that does not require workers to go underground, face physical exertion and get dirty has been designed by Prof. Meredith Thring of the Engineering Department of London University, Queen Mary College. The new mining method is operated by remote control based on automation and assisted by television. It enables future miners to sit in a clean office above the mine and guide a seven-metre long cutting machine which moves through the pit face at the rate of six and a half kilometer an hour. Every movement of the machine is controlled magnificiently by the operator's movements. He wears special sleeves and gloves electrically linked with the robot miner underground. The machine is capable of magnifying upto twenty times every hand movement with its own two hands designed for grasping with anything from a gentle to a vice-like grip. The mechanical hands may pick up any tool such as high speed drills, powered hammers and gas jets and operate them electrically. The machine can also multiply and force applied by its operator upto 1,000 times.

Poona to have computer centre

The Poona University will soon have a regional computer centre

on its campus. The Department of Electronics of the Central Government will extend all the necessary facilities in the setting up of the centre. The other participating institutions would be the National Chemical Laboratory and the College of Military Engineering. Dr. Ram Takavale, Vice-Chancellor of the university said that the third generation computer to be installed in the university would be the fifth of its kind in the country, the other four being in Chandigarh, Roorkee, Calcutta and Banaras.

The area of operation of the computer would include university examination work and also those of the National Defence Academy and various military industrial establishments in Maharashtra.

Karnataka to amend Varsities Act

The Karnataka Government would soon bring about changes in the university acts. The revised rules and regulations for holding election of student representatives in the senate of universities are being worked out and an announcement is likely to be made in this behalf by the State Government. A satisfactory solution is also being worked out to solve the problems of the agitating non-teaching employees of Karnatak University. The practice of having ad hoc appointments would also be reviewed and alternative suggestions would be put forward so that the work of the universities is not hindered and the minimum number of ad hoc appointments are made for the various teaching and non-teaching jobs in the universities.

UGC Chairman pleads for review of Govt. attitude towards academic community

Prof. Satish Chandra, Chairman of the University Grants Commission, while addressing the convocation of the Kashmir University made a strong plea for re-examination of the attitude of the government towards the academic community, as also the entire question of Centre-State relations

in the sphere of higher education. He depreciated the idea that the problem facing higher education in the country could be resolved by increased government control at various levels.

While financial accountability to a popularly elected government can hardly be questioned, the doctrine of accountability cannot be pushed as far as to seriously erode or abridge the conception of university autonomy itself. He reiterated the suggestion made by the Commission for a moratorium for atleast five years for opening new universities in the country with a view to raising the academic standards and introduce economy of expenditure. He said the recommendations of the Commission had received general agreement of the government but he expressed the fear that assurances of restraint on opening new universities are liable to be thrown to winds especially in an election year. The result will be shortage of funds which will hit the existing institutions badly and make task of determination and coordination of standards all the more difficult.

Prof. Satish Chandra said that the denial of legitimate funds to the university on the plea of economy or inadequate returns would not solve any of the problems facing the educational system. The University Grants Commission had all along been pleading with the Central Government and the Planning Commission that they should provide larger non-plan funds to the Commission for undertaking specific programmes in various universities. He however regretted that the Commission had to abandon such programmes because of sharp cut back of its resources for the Sixth Plan period.

VCs to meet in Patna

The Bihar State Inter-University Board would be having a special meeting in Patna to discuss the teaching and examination problems of different universities in the State. The Chief Minister, the Minister for Higher Education, the top civil and police

authorities besides vice-chancellors of different universities will be attending this meeting. The deliberations of the conference will aim at evolving ways and means to bring normalcy in the academic and examination calendars in the universities, improving standard of teaching, complete the prescribed courses of studies in time and ensuring fair and timely conduct of examinations and timely publication of results.

To ensure backlog of pending examination programmes for holding as many as three examinations for certain courses during the calendar year 1980 will be prepared and serious attempts will be made to ensure that the universities in the State should be able to hold all the pending examinations as early as possible.

Need to protect Himalayan Ecology

Dr. M. S. Swaminathan, Secretary, Union Ministry of Agriculture has called for immediate steps to prevent any further damage to the himalayan ecology by extensive deforestation and erosion and landslides being promoted by the construction of roads and mines. If this was not done by the end of the century, the future of the Indo-Gangetic agriculture might be in danger.

Dr. Swaminathan while addressing the forest rangers in Coimbatore said that since the Indo-Gangetic belt had the maximum untapped agricultural production reservoir in the country, it would not be possible to feed one thousand million people in the next twenty-five years. Dr. Swaminathan said that the consequences of indiscriminate deforestation and shifting cultivation were now evident in numerous ways like flash floods, landslides, soil erosion and the silting of canals and reservoirs.

He said that unless the forestry became a "people's movement" rather than remaining the responsibility of the forest department, the country could not provide the required ecological security nor would it meet the

further needs of tea industry, shipping, railways and domestic use.

Dhanbad organises M. Tech Engineering Geology

The one-year postgraduate programme for Master of Technical Engineering Geology was started by the Indian School of Mines, Dhanbad, during academic session 1978-79, for graduates in Civil Engineering and postgraduates in Applied Geology. The first batch has passed out this year. The programme, first of its kind in India, was designed after prolonged consultations with G.S.I., user organisations and industry to suit their special needs and includes specialised courses like Geotechnical Behaviour of Earth Materials, Soil Mechanics and Foundation Engineering, Geotechnics of Dams and Tunnels, Land Slides and Geological Hazards, Geohydrology and Photogeology Engineering, Geophysics and Rock Mechanics with a special emphasis on it. Every student has to do a comprehensive dissertation project. The programme is being conducted in the Department of Applied Geology under the guidance of Prof. V.D. Choubey who had his specialized advanced training in Engg. Geology (Rock Mechanics) at Norwegian Geotechnical Institute, Oslo, Norway.

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stacles from the path of mobility, we will not be able to dismiss the nagging worry if the ultimate goals of mobility has dominantly been a one-way street—from the most needy part of a country to its least needy, from the less developed country to the more developed. In our preoccupation with the modus operandi, with the technique, we suffer through reverse adaptation, when goals are adjusted to suit the means developed. Indeed the pursuit of knowledge, in these circumstances, give place to knowledge of the pursuit. The final authentication of knowledge is made only in its use in purposive and cultu-

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I hope that this meeting will also look into other matters like: discriminately higher fees charged to foreign students, racial and developmental chauvinism that he has to contend with and others. □

Madras launches an innovatory project

The Madras State Council of Educational Research and Training is launching a new project called Comprehensive Access to Primary Education to cater to those children who have been in disadvantageous position and consequently remained neglected so far by introducing a new strategy and approach.

Though there has been a phenomenal expansion in educational facilities and in enrolment, still the universalisation of elementary education remains a distant goal. This is due to wastage at different levels after enrolment. The rate of wastage is particularly high in rural and urban slums and among children belonging to scheduled castes and scheduled tribes. Low attendance in schools and early leaving of schools after enrolment are attributed to reasons like poor economic conditions necessitating children to remain out of school to help their parents in earning a livelihood. The fixed curriculum and within-the-classroom teaching methods have little relevance to their lives and needs to their roles as citizens. In recent years huge monetary inputs and great human efforts have been mobilised to retain the children by various measures. The UNICEF-aided national projects, namely, Primary Education Curriculum Renewal now in operation in thirty schools and Development Activities in Community Education and Participation introduced in two centres in Tamil Nadu are engaged in determining the relevant curriculum and institutional materials for the primary stage of education. Educational programme for those children who have left schools so early that they lapse into illiteracy, a national project called Comprehensive Access to Primary Education assisted by UNICEF has been planned and the Tamil Nadu government has accorded permission to the SCERT to launch this programme from 1979 onwards.

The project is a bold venture involving a new strategy and

approach. An attempt will be made to reach out to the out-of-school children and educate them wherever they are. The learning materials for these children will not be discipline-oriented textbooks but will consist of short duration teaching modules based on their specific needs and problems. These materials will be aimed at improving their quality of life rather than teaching them the three R's. Four major principles will be kept in view in the implementation of this project, namely, relevance; flexibility; local specificity and socially useful productive work and social service. There will be a shift of emphasis from a specified curriculum to a decentralised curriculum. Though the best agency to develop decentralised curricula is the primary school for want of required degree of expertise here, the elementary teacher training institutions will now be the agency for this task. Production-cum-training mode will be prepared by teacher trainees and they will be tested by students teachers in practising schools with which learning centres will be attached for the purpose.

Tamil Nadu has launched this massive programme during the year and all the training institutions numbering about seventyfive will be involved in the scheme. The learning centres will be attached to each training institute for field testing and revision of materials. Massive orientation programmes to Heads of Training Institutes and Teacher-educators and education officers has been undertaken for the purpose.

Delhi plans 'Open School' from 1980

The Central Board of Secondary Education has finalised a plan to set up an Open School. Dr. David Seligman, a British educational expert was also here and had detailed discussions in this regard with the officials of the Union Ministry of Education and the Central Board of Secondary Education. Through this system it is proposed to extend secondary and higher secondary education to students who want to study at their own pace and places. The

school will supplement the formal system of education.

The School will be administered under the Central Secondary Education Board and will have the British support by way of course writing consultants from the Open University and equipment. It will cater not only for children of secondary school age who are unable to attend school full time but also for adults, disadvantaged groups and people in rural areas. The School will rely mainly on printed material, though it is hoped also to introduce radio programmes and regional counselling centres. It will be a significant development which will, in time, open up the possibility of a wide range of non-formal and community-related courses. There are already plans for courses for students who have left schools but are now, as young adults, anxious to complete their school education. The "gateway course" will enable such students to attain the minimum standard required for enrolment on a normal course.

It is expected that the open school will build its infrastructure during 1979-80 and will finalise the schemes of studies and prepare the detailed courses soon. The School proposes to enrol students in September-October 1980 for class IX and September-October 1981 for class X. The examination will be conducted in April, 1982.

School system lags in farm education

A study sponsored by the Food and Agriculture Organisation has found that the secondary education in India was paying little emphasis on farm education. With seventy per cent of Indian population engaged in agricultural activities and nearly ten per cent in activities related to agriculture, there can be no doubt that predominant bulk of the student population of the secondary school will enter into agricultural based activities. But the secondary school system has not yet succeeded in providing proper farm education to the young students. In the higher secondary

education programme, agriculture was introduced as one of the schemes of study in the IX, X and XI year of the education course. But in the year 1974 when the total enrolment in the higher secondary stage of education was of the order of five million, there were only 95,000 students who had opted for the agriculture system. It is now a moot question whether secondary school programmes shall include a course in agriculture and not in the form of craft but in the form of general education which can make the people realise that knowledge in the field of agriculture is as much integral to agricultural processes as it is to other economic processes.

Government takes over Jadavpur Varsity

The West Bengal Government has taken over the management of the Jadavpur University. The managing bodies and council governing the Jadavpur University affairs would be replaced by a council identical with the Calcutta University Council.

Prof. Sambhu Ghosh, Minister for Higher Education, said in Calcutta that the main reason for promulgating this ordinance was the continuing prevalence of corruption and irregularities in the examination department of the university. Mr. Justice A.K. Basu is already conducting an enquiry into the affairs of the university. The situation in the university

however compelled the Government to take over the management even earlier though the tenure of the present body was to expire on December 24.

The proposed council will comprise teacher representatives and Chancellor's nominees. The Government did not favour holding of elections according to the provisions of the university for the formation of the various university bodies and committees. A new legislation would be introduced in the next session of the Assembly by the Government.

Dr. A.N. Bose, Vice-Chancellor of the university has resigned in protest against the action of the Government.

Bengal sets up college service commission

The West Bengal College Service Commission set up in this month will hereafter recruit teachers in private and government sponsored colleges. The Commission has been constituted with Dr. R. N. Bhattacharyya as its Chairman.

The Minister for Higher Education, Mr. Sambhu Ghosh said that all the private and sponsored colleges have been instructed not to appoint any teacher on ad hoc basis. He said that those who had been appointed on ad hoc basis during the last one year would also have to go through the screening process of this Commission.

Personal

1. Dr. C. R. Mitra, President of the Association of Indian Universities and Director of Birla Institute of Technology & Science, Pilani, has been elected as the Chairman of the Association of Commonwealth Universities, London, for the year 1979-80.
2. Dr. Devipada Bhattacharya of Jadavpur University has been appointed Vice-Chancellor of Rabindra Bharati University.
3. Prof. Asloob Ansari of the English Department of the Aligarh Muslim University was presented the Iqbal Medal on behalf of the President of Pakistan by the Pakistan's Ambassador in India, Mr. Abdul Sattar, for his valuable contributions towards Iqbal Centenary celebrations.
4. Dr. Narayana Menon, Director of National Centre for the Performing Arts has been elected Member of the International Music Council (UNESCO).
5. Prof. P.S. Ramakrishnan, Dean of the School of Life Sciences of the North-Eastern Hill University has been elected Fellow of the Indian National Science Academy.

Mohamed Ali in Indian Politics

(Continued from page 584)

"easy conscience" of Maulana Mohd. Ali and read a paper entitled "Mohamed Ali and Bipan Chandra Pal : Dispute and Bitterness (1919-1925)". He said that the sole purpose of Mohamed Ali was to make "the requisite reservation in favour of religion". After that, he with 'an easy conscience' condemned those "who take the name of religion in vain and are actuated by amaterial motives which have nothing to do with religion.

Tanika Sarkar in the paper entitled "Study of three communal riots in Bengal, Dacca, Mymen-

singh and Chuttagong 1930-1931" traced some features in the collective mentalities of the relatively depressed Muslim crowd. He believed that even at the height of rioting there were instances when an alternative concept of fair deal was indicated in crowd behavior.

D.E.U. Baker of St. Stephens College (University of Delhi) believed that the Tilakites also increased the Muslim sense of insecurity by taking their political offensive into the legislative itself. One of these instances of this was the vote of no-confidence in the ministry in early 1924 led by Moonje and Swarajist members

of the legislature, many of them avowed Tilakites.

Uma Singh stated that the primary objective of Motilal Nehru was to get the Committee arrive at some kind of unanimity and once this was done he wanted to enlist as much support as possible for the report. In order to achieve this end, he expressed his desire of dissociating some of the communal parties like Muslim League and the Hindu Mahasabha if they were dissatisfied with the report. There is no doubt that Motilal Nehru's handling of the communal problem in 1928 proved harmful to the national cause. □

A list of Doctoral Theses Accepted by Indian Universities

PHYSICAL SCIENCES

Mathematics

1. Achuthan, Nirmala. On some extremal problems in graph theory. Indian Statistical Institute, Delhi.
2. Gangopadhyaya, Dilip Kumar. On the study of some functions and sets connected with the Cantor set and sets of similar type. University of Calcutta.
3. Madhavan, S. Contributions to the theory of weakly inverse semi-groups. University of Kerala.
4. Raghava Mohan, Srinivasa. Linear complementarity problem with a Z-matrix. Indian Statistical Institute, Delhi.

Statistics

1. Goyal, Asha. Computer aided analysis of business data processing system. Indian Institute of Technology, Kanpur.
2. Muddapur, Mahadevayya Veerayya. Some topics in stochastic processes. Karnatak University.
3. Ratani, R.T. Parametric inference under constraints. Gujarat University.

Physics

1. Debnath, Narayanchandra. Electronic energy states in disordered solids. University of Calcutta.
2. Hosur, M.V. X-ray crystallographic investigations of some 'High energy' phosphates and related nucleotides. I.I.Sc., Bangalore.
3. Kaul, Vijaya Kumar. Ultrasonic absorption studies in liquid media. Andhra University.
4. Mohammad Saleem. Electro optical properties of some luminors. Ravishankar University.
5. Shaikh, A.M. Investigations in high temperature single crystal by X-ray crystallography. I.I.Sc., Bangalore.
6. Srinivasan, M.R. Dielectric and spectroscopic studies of phase transitions in ferroelectric and related crystals. I.I.Sc., Bangalore.
7. Tiwari, M.K. Some electrical resistivity and high pressure studies in critical binary liquid systems. I.I.Sc., Bangalore.
8. Wathore, Tukaram Nagoba. Solid state properties of some alkali halates by means of X-ray diffraction techniques. Marathwada University.

Chemistry

1. Ahmed, Mohammad Khursheed. Studies on the oxidation of benzohydroxamic acid. Ravishankar University.
2. Behera, Gopa Bandhu. Studies on the effect of structural and environmental changes in reaction rate and on five and six membered heterocyclic compounds containing nitrogen and/or sulphur. D.Sc. Sambalpur University.
3. Datta, Krishnamohan. Studies in the metal chelates of heterocyclic carboxylic acids and related ligands. University of Calcutta.
4. Gangopadhyay, Nemaichand. Chemistry of some natural heterocycles. University of Calcutta.
5. Gavai, Arun Narayan Rao. Polarographic studies of inhibitory effect of some organic compounds in acid media. Ravishankar University.

6. Gopala Rao, Bade Venu. Study of new ligands from phyllanthus niruri Linn and synthesis of new aryl naphthalene. Andhra University.

7. Guha, Amalendu. Studies on vinyl polymerization. University of Calcutta.

8. Mandal, Sukhendubikas. Synthetic and biological studies on lipids. University of Calcutta.

9. Nandi, Sikha. Organic thio-ligands as complexing agents in the spectro-photometric determination of some transition metals. University of Calcutta.

10. Nandi, Sikha. Organic thio-ligands as complexing agents in the spectro-photometric determination of some transition metals. University of Calcutta.

11. Sahu, Brundaban. Kinetics and mechanism of some redox processes. Berhampur University.

12. Sambi Reddy, Kalakota. A chemical study of physalins from physalis species. Andhra University.

13. Sashi Kumar, V.P. Studies in terpenoids. I.I.Sc., Bangalore.

14. Suryanarayanamurty, Pidaparty. Kinetics of some catalysed redox reactions. Andhra University.

Engineering & Technology

1. Bonde, D.H. Circular elastic inclusions in cylindrical shells. I.I.Sc., Bangalore.
2. Chakrabarti, Utpal Kumar. Deposition and characterisation of spin-on-oxide (Spoxide) film of silicon using an organosilicon compound. I.I.Sc., Bangalore.
3. Chakravarthy, C.R. Video signal processor for Air Traffic Control Radar Beacon Systems (ATCRBS). I.I.Sc., Bangalore.
4. Chanda, Mridula. Catalytic vapour phase oxidation of isopropanol to acetone. I.I.Sc., Bangalore.
5. Ghosh, Sktipada. Analysis of joints with elastic pins. I.I.Sc., Bangalore.
6. Godbole, Pramod Bhaskar. Integrated retardation method for a thermal stress problem and a new scattered light method for three dimensional photoelasticity. I.I.Sc., Bangalore.
7. Jain, Narendra Kumar. Hot working and deformation mechanisms in electrosag refined materials: En36A steel and RR58 aluminium alloy. I.I.Sc., Bangalore.
8. Mitra, Ambar Krishna. Unsteady viscous flows past sharp corners. I.I.Sc., Bangalore.
9. Palaniappan, R. Investigations on DC link forced commutated inverters for improved performance with induction motor drives. I.I.Sc., Bangalore.
10. Rajagopal, C. Studies on the electrical properties of conductor-insulator composites. I.I.Sc., Bangalore.
11. Raman, P.V. Studies on the vibrations of deep beams and thick plates. I.I.Sc., Bangalore.
12. Rammohan Rao, B. Some new computational algorithms for analysis of linear systems with applications to optimal control. Kakatiya University.
13. Sen, Ranjan Kumar. State assignment of asynchronous sequential machines: A graph theoretic approach. University of Calcutta.

14. Sreenivasan, N.R. Elastic-plastic analysis of rotors. I.I.Sc., Bangalore.

15. Venkateswaralu, P. A critical study of variational formulations in fluid flow and heat transfer and some applications. I.I.Sc. Bangalore.

16. Wahid, Parveen Fatima. Theoretical and experimental investigations on the dielectric coated conducting sphere excited in the symmetric transverse magnetic mode at microwave frequencies. I.I.Sc., Bangalore.

BIOLOGICAL SCIENCES

Biochemistry

1. Chakrabarti, Debnarayan. Studies on phospholipase from *Neurospora crassa*. University of Calcutta.

2. Chandrika, S.R. Studies on the regulation of aminolevulinic dehydratase: The rate limiting enzyme of the heme biosynthetic pathway in *Neurospora crassa*. I.I.Sc., Bangalore.

Microbiology

1. Gadagkar, Raghavendra. Physiological and biochemical studies on mycobacteriophage 13. I.I.Sc., Bangalore.

2. Pai, S. Balakrishna. Microbial transformations and biohazards of organophosphorus pesticides and fenamino-sulf. I.I.Sc., Bangalore.

Botany

1. Agrawal, Pushpa. Role of pectolytic and cellulolytic enzymes in pathogenesis with reference to anthracnose disease of papaya fruits. Ravishankar University.

2. Bhardwaj, Ravindra. Structural and functional changes induced by water stress in chloroplast during greening of *Hordeum vulgare*. Jawaharlal Nehru University.

3. Panda, Brahma Bihari. Studies on the cytogenetic hazards from agricultural chemicals. Berhampur University.

Zoology

1. Battish, Sarwan Kumar. Survey of the free living entomostracan (Crustacea) fauna of Punjab with special reference to recent Ostracoda. Punjabi University.

2. Elango, N. Glyoxalase I of rabbit liver: Purification and characterization. Jawaharlal Nehru University.

3. Nallabathuia, Sailaja. Studies on protozoan parasites of millipedes and insects. Andhra University.

Medical Sciences

1. Agarwal, S.S. Isolation, characterisation and pharmacological studies of the active principles of *Daucus carota* with special reference to their anti-fertility effects. A.I.I.M.S., Delhi.

2. Akhtar, Mohammad Hasin. Study of photosensitization and hepatotoxicity by the toxic principles of the plant *Lantana camara*. A.I.I.M.S., Delhi.

3. Balachandran, N. Immune response to vaccine virus and its surface components with particular reference to protective immunity. A.I.I.M.S., Delhi.

4. Bamezai, R.N.K. Antenatal diagnosis in human genetic disorders and high risk pregnancies. A.I.I.M.S., Delhi.

5. Bhalla, V.K. Biochemical characterization of anonymous mycobacteria and their pathogenicity. A.I.I.M.S., Delhi.

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Nuclear Information

(Continued from page 578)

Information and Documentation (CID), European Nuclear Documentation System (ENDS), Luxemburg for extending their SDI service to BARC Scientists. At present, the possibility of using IBM-360/44 computer at the Delhi University Computer Centre, in collaboration with the Indian National Scientific Documentation Centre (INSDOC) for starting a SDI service on the national level is being actively explored. Simultaneously, the possibility of using the computer IBM 370/155 at the Indian Institute of Technology (IIT), Madras, DEC-10 at the Tata Institute of Fundamental Research

(TIFR), Bombay, and EC-1030 at the IIT, Bombay, is being studied.

INIS Net-work Project

INIS Secretariat has mooted to start an experimental cooperative computer-based network which will provide INIS Centres with a facility for searching the INIS data bases at the Agency directly from remote locations. In the first stage of the experiment, some 10 Member States participating in INIS might have on-line access via dial-up or leased lines to the Agency's computer for the purpose of searching the bibliographic data bases held by the IAEA. □

CLASSIFIED ADVERTISEMENTS

SOUTH GUJARAT UNIVERSITY, SURAT

UNIVERSITY CAMPUS, UDHNA-MAGDALLA ROAD, SURAT-7

Applications are invited in the prescribed form (in eight copies) for the following teaching posts in the Post-Graduate Departments of the University.

Sr. No. Name of the Department and the number of posts

1. **Business and Industrial Management**
 - (i) Two Professors
(One in Marketing Management the other in Organisational Behaviour and Personnel Management)
 - (ii) One Reader
(Either in Marketing Management or in Organisational Behaviour and Personnel Management)
 - (iii) Two Lecturers
(One in Organisational Behaviour and Personnel Management the other in Financial Management)
 - (iv) One Placement Officer (Non-Teaching)
 2. **Economics**
One Reader (Econometrics)
 3. **Public Administration**
One Lecturer
 4. **English**
One Lecturer
Specialisation in British and American Literature with training in English Language Teaching.
 5. **Physics**
 - (i) One Reader
Nuclear Physics/Particle Physics/ (Theoretical)
 - (ii) One Lecturer
Nuclear Physics (Theoretical)
 6. **Chemistry**
Two Readers
Theoretical Chemistry / Physical Organic / Physical / Solid State Chemistry.
 7. **Maths/Statistics**
Two Lecturers in Mathematics
 8. **Rural Studies**
 - (i) One Reader
A person with a doctorate in Rural Economics with specialisation in rural industrialisation and Marketing Rural Finance and Co-operative will be preferred.
 - (ii) One Lecturer
- Pay Scales as are under**
- (1) Professor : Rs. 1500-60-1800-100-2000-125/2-2500
 - (2) Reader : Rs. 1200-50-1300-60-1600-Assessment-50-1900
 - (3) Lecturer : Rs. 700-40-1100-50-1300-Assessment-50-1600
 - (4) Placement Officer : Rs. 1100-50-1300-60-1600.

In addition to pay the teachers of the University Departments are entitled to draw dearness allowance, house rent

allowance and other benefits like contributory provident fund and gratuity as may be decided from time to time.

Information about the qualifications prescribed for each post and application forms prescribed for each post can be had from the undersigned on payment of Rs. 7/- in cash or by Postal Order alongwith self addressed envelope of 23 cm. x 13 cm. size duly stamped with Re. 0-50 ps.

The last date for the application is 10-12-1979.

G. A. Desai
REGISTRAR

UTKAL UNIVERSITY BHUBANESWAR-4

Advertisement

No. Estt. II (32-A)/28434/79

Dated 2.11.1979

Applications are invited for the post of Deputy Registrar of the Utkal University. Five copies of application form will be supplied to the candidates from the office of the undersigned in person on payment of Rs. 5.35 paise or by post on receipt of a Crossed Indian Postal Order worth Rs 7.85 paise payable to the Finance Officer, Utkal University, Vani Vihar, Bhubaneshwar-4. The candidates who are in service should apply through proper channel but they should submit advance copies (four) of their applications alongwith attested copies of certificates mark-sheets etc. so as to reach this office by the date specified. The University will pay the leave salary and pension contribution for only two years in respect of the candidates in Govt. service, if selected.

Candidates are required to submit alongwith their applications attested copies of their diplomas, certificates and mark-sheets of all examinations and testimonials.

Qualifications and Experience

- (i) Atleast a Second Class Master's Degree.
- (ii) Eight years experience in teaching in a college/university or in educational administration preferably University administration.

Preference will be given to the candidates having adequate experience in educational administration.

Scale of Pay: Rs. 1000-1530/-.

A higher initial may be given to a candidate in case of a suitable qualified and experienced person.

If a teacher of a college/University is selected, he will be allowed to get the scale of pay he was getting as a teacher in the parent department.

The last date for receipt of application is 24-11-79. No application will be entertained after the due date.

S. K. Panda
REGISTRAR

PANJAB UNIVERSITY CHANDIGARH

Advertisement No. 25/79

Applications are invited for the following posts of Professors in the scale of Rs. 1500-60-1800-100-2000-125/2-2500 so as to reach the Registrar, Panjab University, Chandigarh, along with the postal orders of Rs. 10/- by December 10, 1979. Fourteen days extra time is permissible to persons who have to submit their applications from abroad.

POSTS

Professors

Punjabi—1
Physical Education—1
Law—1 (Temporary)

Qualifications

- (a) A first or high second class Master's degree of an Indian University or an equivalent qualification of a foreign University in the subject with bright academic record.
- (b) Either a research degree of doctoral standard or published research work of high standard in journals of repute.
- (c) About 10 years' experience of teaching Post-Graduate classes and/or research, and
- (d) Experience of guiding research Doctoral level.

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge in the discipline concerned.

Candidates who do not possess doctoral degree are required to submit 10 typed/cyclostyled copies of brief resume of their published work.

Persons already in service should route their applications through proper channel. Incomplete forms and those received after the due date will not be entertained. Serving employees, may however, send their applications on the prescribed proforma, direct to the University. They may route another copy through their Department. They will be allowed to present themselves for interview only on the production of "No Objection Certificate" from their employers. Canvassing in any form will disqualify the candidate.

Application forms can be obtained from the Cashier, Panjab University, Chandigarh, personally on payment of Rs. 2/- or by making written request to the Finance and Development Officer, Panjab University, Chandigarh, accompanied by self-addressed stamped envelope of 23 x 10 cms. and a postal order for Rs. 2/- drawn in favour of the Registrar, Panjab University, Chandigarh.

A.I.U. PUBLICATIONS

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1. Universities Handbook—1979	150.00
2. Association of Indian Universities—History	50.00
3. Higher Education and Development	30.00
4. University Finance—A statistical profile	50.00
5. Enrolment in Higher Education—A trend analysis	20.00
6. Resource Allocation on Education—Research Studies	20.00
7. Research in Economics of Education—India	10.00

Bibliography of Doctoral Dissertations

8. Social Sciences	50.00
9. Humanities	100.00
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Note : Also available in paperbacks in individual discipline

12. Social Sciences & Humanities—1970-75	150.00
13. Physical Sciences—1970-75	120.00
14. Biological Sciences—1970-75	In Press
15. Social Sciences & Humanities—1975-76	50.00
16. Natural & Applied Sciences—1975-76	90.00
17. Social Sciences & Humanities—1976-77	70.00
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27. Monograph on Semester System	14.00
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44. Handbook of Rules & Regulations for Inter-University Tournaments	7.50
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University News

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245

X CONVENTION INDIAN AGRICULTURAL UNIVERSITIES ASSOCIATION NOV. 5 TO 7, 1979



Shri H.S. Brar, Governor of Haryana, at the inaugural session of tenth convention of Indian Agricultural Universities Association at HAU, Hissar. Dr. P.S. Lamba, President, IAUA and Dr. D.P. Singh, Vice-Chancellor, Rajendra Agricultural University are also seen in the picture.

JAWAHARLAL NEHRU UNIVERSITY

Centre of Post-Graduate Studies, Imphal
Advertisement
No. Aca. 4/1979

Dated : 12-11-1979

Applications are invited for Junior Research Fellowships in this Centre for the year 1979-80 as follows:—

- (i) one in Mathematics
- (ii) one in Life Sciences
- (iii) one in Manipuri
- (iv) one for Scheduled Caste/Scheduled Tribe candidates with option to do the research in any discipline available in the Centre.
- (v) two for the disciplines of Economics, Political Science, History or English, not more than one being in a particular discipline.

The candidates for the Junior Research Fellowships shall have to be Master's Degree holders with first class or high second class (50% marks) or equivalent letter grade of a recognised University and shall be selected on merit basis, and the Fellowships mentioned in No. (v) above shall be awarded on inter-se merit basis. The value of the Fellowship is Rs. 400/- per month. Applications along with the relevant information can be obtained on payment of Re. 1/- either in cash or by Money Order from the Senior Administrative Officer, Jawaharlal Nehru University, Centre of Post-Graduate Studies, Canchipur, Imphal-795003, by sending a self-addressed stamped (Rs. 0.90p.) envelope of the size of 23cm x 13 cm. or by calling at his office. Completed application must reach the Senior Administrative Officer of the Centre on or before the 12th Dec. 1979.

MARATHWADA UNIVERSITY AURANGABAD

Advertisement No. ESTT/RO/62

Applications in the prescribed form from candidates fulfilling following conditions of qualifications and experience, are invited for the post of Registrar in the pay-scale of Rs. 1500-50-1700-75-2000-125/2-2250 (Revised) plus other admissible allowances, so as to reach the University Office on or before December 31, 1979.

Qualifications and Experience

- (i) Master's Degree at least in Second Class of a Statutory Indian University or a Degree recognised as equivalent thereto.
- (ii) At least ten years' administrative experience in a responsible executive position in an educational institution, preferably in a University or in a Government Department.

OR

At least five years' teaching experience in a College or a University Department and five years' administrative experience.

- (iii) Proficiency in Marathi and English Languages.

Other things being equal, preference can be given to the candidates belonging to the Scheduled Castes and Scheduled Tribes.

Candidates applying for the post of Registrar shall not below 35 years and above 50 years of age at the time of appointment. This age-limit shall not apply to candidates who are already in the service of the University.

The Executive Council may relax the prescribed qualifications, experience and age-limit in suitable cases.

The candidate selected for the post of Registrar shall be appointed on probation for a period of two years in the first instance and on expiry of the said period and on his having completed the probationary period satisfactorily he may be confirmed by the Executive Council.

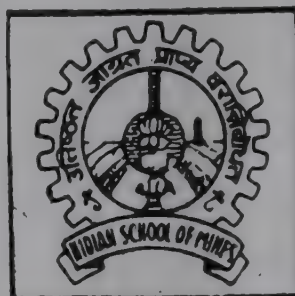
Seven copies of applications together

with seven copies of each of the testimonials, if any, giving particulars in the prescribed form (which will be supplied on receipt of a Crossed Indian Postal Order of Rs. 3/- towards the cost of the form) should be sent to the Registrar on or before the prescribed date. Testimonials should be attested by a Principal of a College or Member of the Senate of the Marathwada University or by a Gazetted Officer. The prescribed application forms will be supplied to the candidates on request accompanied by a self-addressed envelope (23 x 10 cms) bearing postal stamps worth Rs. 2/- for the postage.

Candidates who are employed at present must submit their applications through their employers.

Canvassing, direct or indirect will be a disqualification.

REGISTRAR



Indian school of Mines

DHANBAD-826004

No. 615113/79

November 8, 1979

Admission to M Phil (Applied Mathematics) programme

Applications are invited from candidates possessing requisite qualifications for admission to the one-year M Phil programme in Applied Mathematics, being offered by Indian School of Mines, which is deemed to be a University under UGC Act.

2. **Eligibility requirements :** Masters (or equivalent Post-graduate) degree in Mathematics/Statistics, preferably Applied Mathematics. The candidates should have obtained at least 60% marks in the qualifying examination (relaxable to 50% for sponsored candidates).

3. Preference will be given to sponsored candidates in general and sponsored college teachers in particular. Sponsorship in this context means retention of lien on post and grant of suitable allowance. Applications of sponsored candidates should carry suitable endorsement by the Employer.

4. Unsponsored candidates are eligible for a scholarship of Rs. 400/- p.m. (for a period not exceeding 12 months) provided they have secured 60% marks in the qualifying examination.

5. After completion of M Phil one (or more) candidate(s), subject to availability, may be offered Junior Research Fellowship for working for the Ph D degree.

6. Application Forms, along with the relevant information bulletin, can be obtained by sending a crossed Postal Order for Rs. 5/- made payable to the Registrar.

7. Candidates have to appear for personal interview, if necessary.

LAST DATE FOR RECEIPT OF COMPLETED APPLICATIONS :
DECEMBER 15, 1979.

S. P. VARMA
REGISTRAR

UNIVERSITY NEWS

Vol. XVII DECEMBER 1
No. 23 1979

A Fortnightly Chronicle of Higher Education Price
80 Paise

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Opinions expressed in the articles and reviews are individual and do not necessarily reflect the policies of the Association

Editor : ANJNI KUMAR

AIU hosts UNESCO meeting

Subject : The Recognition of Studies, Diplomas & Degrees in Higher Education

At the request of the Ministry of Education, Government of India, the Association of Indian Universities organised a Unesco meeting of experts nominated by the Director-General of the UNESCO from various countries in the region of Asia and Oceania. The meeting was convened by Unesco for the purpose of outlining a preliminary draft convention on the recognition of studies, diplomas and degrees in higher education in Asia and Oceania. It may be mentioned here that the Unesco has already evolved such regional conventions covering other parts of the world like Latin America and Caribbean, Arab and European States bordering on the Mediterranean, etc.

The meeting which was held at New Delhi from the 12th to the 16th November, 1979 was attended by one expert nominated by the Director-General of Unesco from each of the following countries : Afghanistan, Australia, Bangladesh, China, India, Indonesia, Japan, Malaysia, the Philippines, Sri Lanka, USSR and Vietnam. The expert invited from Pakistan could not attend.

The meeting was also attended by observers from Member States, from Holy See, from the UN agencies and from inter-governmental and non-governmental organisations.

The Director-General of Unesco was represented at the meeting by Mr. A. Trapero. Dr. H. Saba who was nominated by the Director-General as consultant also participated in the meeting.

The meeting was inaugurated by Dr. C.R. Mitra, President of the Association of Indian Universities on 12th November, 1979. Mr. A. Trapero also addressed the inaugural function and the vote of thanks was given by Mr. M.S. Ramamurthy, Deputy Secretary of the Association of Indian Universities.

Later the meeting elected unanimously the following as members of the Bureau :

Chairman	: Dr. C.R. Mitra, President, Association of Indian Universities.
Vice-Chairmen	: H.E. Datuk Haji Lokman Musa, Ambassador, Permanent Delegate of Malaysia to UNESCO (Malaysia) Mr. Yoshikazu Hasegawa, Planning Officer, Ministry of Education, Science and Culture (Japan)
Rapporteur	: Prof. E.G. Saint, Deputy Chairman, Australian Committee on Overseas Professional Qualifications (Australia)

The meeting concluded on 16th November, 1979 when it finalised its draft recommendations for submission to the Director-General of Unesco.

NAEP & Colleges : an appraisal

L. R. Shah*

A Modern university should provide for a multi-level training system which will be able to meet the country's needs move effectively and to enable a greater number of people to continue to use and develop their skills at different periods of their lives. The National Adult Education Programme recently launched by the National Government and the various State Governments in the country provides an opportunity for teachers and students to help the community around institutions of higher learning. The main focus of NAEP is on the deprived sections of the society—those living below the poverty line, especially those belonging to scheduled castes and scheduled tribes, and women.

The National Adult Education Programme is ambitious in formulating a coverage of one hundred million persons in about five years and in emphasising that the programme would be flexible in curriculum and methods, relevant to the needs of the learners and of the environment and systematic in all respects of implementation.

It is obvious that such an enormous national endeavour must draw its strength and succour from the participation of all the sections of the society. The system of formal education cannot remain aloof from this programme. It has to be its instrument as well as its ultimate beneficiary. For, it is only when the vast masses who have been hitherto excluded from the formal system contribute to its life-blood, and the formal system become the energising force for our progress.

While adult education should emphasise imparting of literacy skills, the programme should be related to the working and living conditions of the learners, the challenges of the environment and the development needs of the country. In any case, adult education programmes should not be permitted to be reduced to mere literacy work, important as this is.

An equally important element is functional developing. Participation of the people should help in improving their functional skills, help them in becoming better citizens and result in the improvement of the quality of life.

The National Service Scheme has been in existence for more than ten years now. During this period it has grown both quantitatively and qualitatively and in the variety of activities undertaken in its programmes. The student volunteers have been participating in a number of activities related to the socio-economic development of the people and for bringing about a social change. NSS units of almost every University and college have adopted either one or more villages or slum areas and they have been carrying on a variety of activities in these habitations. It should be possible for the universities and colleges to

organise adult education centres in such areas which can become an instrument of allround development.

NSS volunteers can be involved in NAEP in a variety of ways. While individuals or groups of two or three students may undertake actual conduct of adult education centres, some volunteers may be engaged in certain promotional activities. Some of them may also be engaged in post-literacy and follow-up activities while some others can assist in the production of learning/teaching materials.

While undertaking adult education programmes, each institution of higher education has to be guided by its own vision of its social role and also to the extent to which commitment can be engendered among the teachers and the students. Such involvement should be visualised as a means of establishing fellow-feeling between the teachers and the students on the one hand and the learners and their families on the other. It is of crucial importance that each university or college which decides to undertake adult education programmes should do so in a substantial manner rather than in a marginal way.

It needs to be emphasised that when the students and the teachers take part in adult education activities it is not merely the community recipients of their services which would be benefitted. In fact involvement of students in NAEP would give them an opportunity for expression of idealism, sense of adventure and creativity and enable them to better understand the social situation and social problems.

Another factor which should be considered in this context is that the programme undertaken by colleges and universities should be cost effective. It should not be excessively expensive. The scheme of assistance by U.G.C. to colleges and universities for this purpose takes note of the cost factor.

Last year, prior to the formal inauguration of the NAEP, the Secretary, Union Ministry of Education and Social Welfare had sent an appeal to all the Principals of colleges and Vice-Chancellors of Universities to organise Seminars in their respective institutions on NAEP. The main objective was to enlighten through study and discussion the institutions, the teachers, and students about the programme and the various issues related to its effective implementation. The response of the colleges to the appeal of the Secretary was very encouraging.

In the meanwhile the University Grants Commission formulated guidelines on adult education and extension programmes and details of the assistance to be provided to universities and colleges for implementing the programme. These were widely circulated among all the institutions. It was also suggested to the universities and colleges to link NAEP with the NSS.

*Programme Adviser Ministry of Education & S.W., New Delhi.

It would be relevant to state that prior to launching NAEP more than 20 universities had been participating in the programme of adult/continuing education for several years, with the support of the University Grants Commission. These universities were requested to incorporate in the Programmes of Department/Centres of Adult Continuing Education activities envisaged in the guidelines of the UGC on NAEP wherein the major thrust was on serving the weaker sections of the society, women, scheduled castes, scheduled tribes and other backward and oppressed classes.

The UGC also appointed a small Committee to examine the proposals received from the universities and the colleges and to generally assist the universities in implementing the programme.

As of present 43 universities have been given seed money to enable them to formulate their proposals for participation in NAEP. Similarly, nearly 150 colleges have been given seed money amounting Rs. 500/- each for formulating their proposals. NAEP Units have been sanctioned or are in the process of sanction in 29 universities. These are—Delhi, Jammu, Nagpur, Osmania, Bombay, Behrampur, Madurai, Marathwada, Jiwaji, Jabalpur, Gujarat, Baroda, South Gujarat, Sardar Patel, Saurashtra, Andhra, S.N.D.T. (women's), Poona, J.N.U., Udaipur, Kashmir, Gorakhpur, Karnataka, Calicut, Utkal, Sambalpur, Gauhati, Dibrugarh and Agra.

Proposals for organising about 6220 Adult Education Centres received from 515 colleges from all over the country have been accepted for financial assistance.

The proposals of some universities—Aligarh, Allahabad, Ravi Shanker, Awadhesh Pratap, Indore, Vikram, Burdwan, Calcutta, Himachal Pradesh, Kanpur, Kashi Vidyapeeth, Kumaon, Mithila, Rohilkhand, Roorkee and Sri Venkateswara are being processed. Several State level, Inter-University and Regional workshops. Seminars and consultations have been held during the last eight months to discuss with the Vice-Chancellors, Principals of Colleges, NSS Programme Co-ordinators, Heads of Deptt./Centres of Continuing/Adult Education issues related to involvement of teachers and students in NAEP. In many places the institutions needed guidance in formulating proposals for being sent to UGC, which was provided.

Adequate preparation and training of functionaries of adult education is of vital importance in implementing the programme. Steps have been taken to organise training programmes for the adult education functionaries of the universities and colleges teachers, supervisors, instructors (students), whose proposals have been accepted.

Training programmes have been held and are contemplated to be held in the near future in Coimbatore, Trivandrum, (Charal Kunnur), Madras, Mysore, Aurangabad, Pune, Ahmednagar, Bombay, Bhopal, Chandigarh, Bharwari (Allahabad), Gauhati, Puri, Dibrugarh, Calicut, Tirupati and Agra.

The Universities have been advised to adopt learning-teaching materials which are available

either with State Resource Centre and with other Government, Non-Government agencies. Wherever necessary, the universities will produce suitable teaching learning materials for which financial assistance will be made available.

In the course of discussions and deliberations in the seminars and workshops held in different parts of the country during the last few months some major recommendations have emerged. Some of which may be stated :

A large number of colleges and universities have evinced keen interest in participation in the NAEP in a phased manner. Initially about 10 to 15 per cent colleges are to participate in the programme and they will run at least 10 Adult Education Centres, each, which number will gradually increase.

It is a near unanimous view across the country that there should be fullest co-operation between NSS and NAEP. It is generally agreed that adult education field programmes will be undertaken by NSS volunteers. Also, those students who are not presently enrolled in NSS but may decide to participate in NAEP, will be treated as having participated in NSS. The participation of all the students will, however, be on a voluntary basis.

The responsibility for planning of adult education activities, procurement and production of learning-teaching materials, training of adult education functionaries, monitoring research and evaluation will be undertaken by the universities through a cell which will be established in the universities which decide to undertake the programme in a substantial manner. For this purpose the universities have decided to constitute university level advisory committees which may meet three to four times a year and generally oversee and advise on the functioning of NAEP.

The programme will be undertaken only through students and teachers. No remuneration is to be paid to teachers and other employees under the scheme. For supervisors (who may be whole time or part time) services of ex-NSS volunteers or ex-students who have interest and experience in such activities are to be engaged.

In many universities the Vice-Chancellors and senior administrators are of the view that for ensuring effective participation, it may be necessary to review the academic calendar and the spacing and duration of vacations in order to facilitate involvement of teachers and students in NAEP.

The Universities, which have decided to participate in the programme, recognise the priorities in the programme like helping the weaker sections of the society—women, scheduled castes, scheduled tribes and other backward communities.

Some universities are inclined to consider the question of linking NAEP and social work with the curriculum. They realise that extension should be treated as an important and significant activity, like teaching and research, and that the teachers who do good work in NAEP and community services should

(Continued on page 602)

Total Solar Eclipse

Ramesh Chandra Shahi

and

Jai Prakash Chaturvedi*

The ensuing total solar eclipse of 16th February 1980 will be conspicuously visible from India. It will be a golden opportunity to collect valuable scientific data about the sun for our astronomers and a unique experience for all.

An interesting aspect of solar eclipse on the behaviour of animals, birds, insects and plants can be easily witnessed at the instant of totality. The frightened flock of cattle, birds will be seen moving towards their shelters, the sun flower will begin to close and the crickets will hum as if it were night. At the time of totality the whole sky will be doomed into darkness. Sometimes the solar disk furnished with beads, known as Baily's beads, will be observable.

As was predicted by famous scientist Sir Albert Einstein in his General Theory of Relativity that a light ray grazing the limb of sun will change course by $1.75''$ as it moves through the solar gravitational field. This fact can also be verified again on the occasion of his birth anniversary.

It has been found by observing total solar eclipses, that the 'day' is gradually lengthening by a small amount of .001 second per century.

The beginning of the total solar eclipse of 16th February 1980 will be seen from South Atlantic Ocean sweeping the part of Africa South of the equator, South India, Bangladesh and it will be visible at the end in South China.

In our country the totality belt will be 427 km long and 130 km wide passing from Karwar near the west coast to Cuttack on the eastern Ghat. Inside the totality belt will fall the following cities :

"Dharwar; Hubli; Raichur; Nalgonda; Puri and Bhubneshwar." It is expected that the eclipse will begin at 15 hours 39 mts and end at 16 hours. At the instant of total solar eclipse the brilliant solar disk is obscured by the dark lunar limb, a thin red crescent is seen for few seconds around the hidden photosphere. At the end of totality again the red crescent light reappears for few moments and is known as chromosphere. The flash spectrum of chromosphere shows that it is an emission spectrum of rarefied mixture of gaseous vapours. The red light is due to the presence of hydrogen which contributes a good share of total light of all the emission lines. At the same time flame like prominences are also visible.

The solar atmosphere extending outward from the chromosphere at the time of total solar eclipse appears as pale white halo and is known as Corona.

The luminosity of corona is found of the order of a full moon. The spectrum of corona is continuous

as of photosphere along with some emission lines of highly ionized calcium, iron and silicon.

The celestial bodies illuminated by the sun's light, carry their shadows while in their respective orbit. The moon, which is smaller in size to the sun, is attended by a shadow cone extending away from the sun. This shadow cone is obtained by drawing two lines (u_1-u_2 , u_3-u_4) away from the sun touching the moon, inside which our sun is completely blocked off. This region of total shadow is called Umbra. Another two extended tangent lines (P_1-P_2 ; P_3-P_4) give the shadow in the space, from where the sun is partially obscured (Fig. 1). This region of partial shadow is known as Penumbra. Whenever a new moon on or near the ecliptic becomes linear with sun and earth, tapering shadow of moon pointing away from the sun falls on our earth and the region covered by that shadow perceives the occurrence of solar eclipse. A partial solar eclipse is seen in that region where the penumbra of moon descends on the earth. In this case the observer (X) will see that sun disk is partially blocked off by the moon (Fig. 2a). The region on the earth, where the total solar eclipse is visible, depends upon the length of umbra of the moon falling on the earth. The length of umbra (L) of the moon can be calculated, if the radii of sun (R) and moon (r) and the average distance between sun and moon (D) are known. From the figure (3), it is clear that two similar right triangles (OAB) and

(MNB) give
$$\frac{L}{r} = \frac{L + D}{R}$$
 This equation

can be solved for length of Umbra (L) of moon,

$$L = \frac{Dr}{R-r}$$

The diameter of the sun is 1.4×10^6 km and of moon is 3476 km. The average distance between the sun and moon is about 1.5×10^{13} km which give the length of umbra tail of moon is about 3.5×10^{10} km.

The moon is revolving eastward around the earth along the ecliptic (or very near to it) at the rate of about 3380 km/hr. Our earth is also rotating eastward at the rate of 1674 km/hr at the equator. Hence the effective speed of the shadow of the moon sweeping the equator of our earth from west to east is about 1706 km/hr. The speed of shadow increases in higher latitudes, due to this reason this shadow moves at the rate of 8000 km/hr near the horizon. Due to high speed and smaller size of this shadow, the belt of total solar eclipse is longer in length but shorter in width. Totality could be seen for a time less than 7 m 30 s in one position. The long strip of totality is surrounded by a wide portion where the partial eclipse occurs.

Solar eclipse occurs when the moon is new. Although the phase of moon is repeated every month but eclipse does not occur in each month because the orbital plane of the moon is inclined 5° to the eclipse on the celestial sphere. Therefore, neither the umbra nor the penumbra of the moon brush any part of earth, hence no solar eclipse. The interval of time between the two successive arrivals of the sun

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at the same node is 346.62 days. The successive new moon comes after the average interval of 29.53059 days. Corresponding to 18 years and 11½ days (when the five leap years are interfered); the nineteen eclipse years give the 6585.78 days, whereas 223 lunations (the interval of time taken from one new moon to

next one) equal to the 6585.32 days. This numerical data shows that the same type of eclipse will occur near the same place after 18 years and 11½ days. This interval of time is known as Saros and was discovered by Sir Edmund Halley in the 17th century. After the one saros period the solar eclipse of the

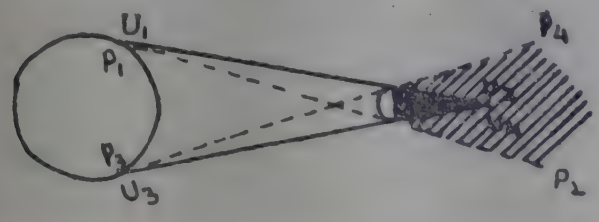


Fig. 1

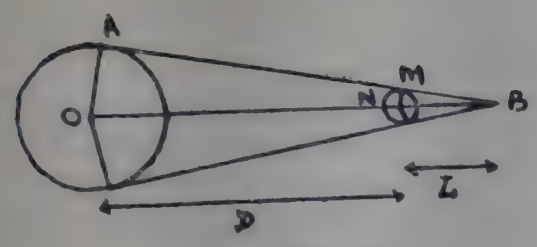
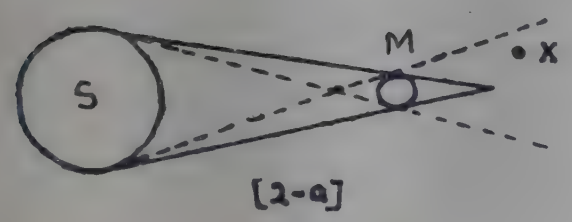
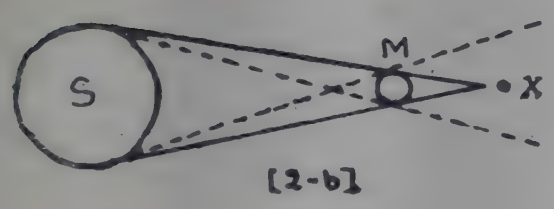


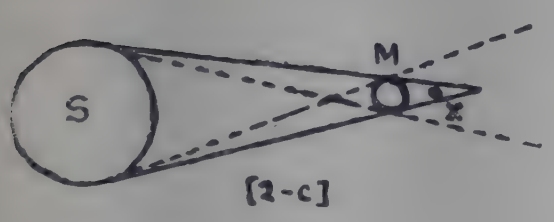
Fig. 3



[2-a]



[2-b]



[2-c]

Fig. 2.

CONDITIONS FOR:

- [2-a] PARTIAL SOLAR ECLIPSE
- [2-b] ANNULAR SOLAR ECLIPSE
- [2-c] TOTAL SOLAR ECLIPSE

Abbreviations: S FOR SUN
M FOR MOON
X FOR OBSERVER

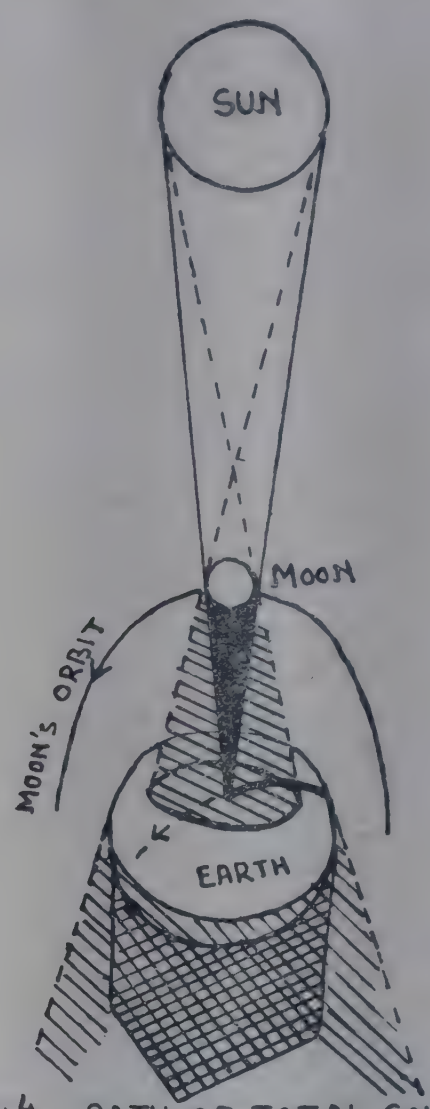
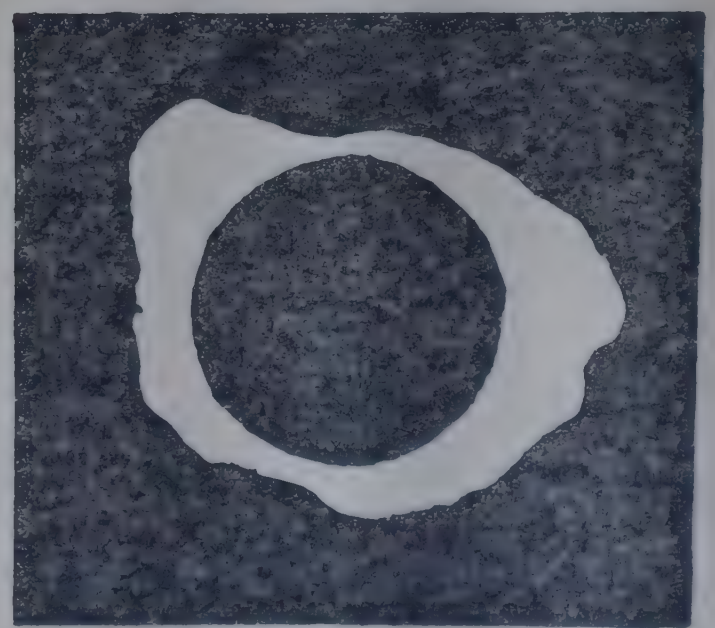


Fig. 4. PATH OF TOTAL SOLAR ECLIPSE



SUN'S CORONA

Fig. 5

same type of eclipses reoccur. But the respective eclipse belt get shifted in position. The saros period contains the one third of a day which shifts the path of eclipse by 120° west in longitude. Therefore, in three saros periods the same part of the earth comes under the influence of eclipse by gradually shifting its latitude in earth saros period. This total solar eclipse of 1980 is the first total solar eclipse conspicuously observable from India in twentieth century. It is very fruitful for our Astronomers to collect valuable scientific data about sun's coronas chromosphere. Several plans are being made to observe this eclipse in India from different observatories to collect fresh information about the sun.

On the occasion of total solar eclipse, astronomers from several observatories plan to gather inside the totality belt with different type of instruments. The preparations are made one or two months earlier to the scheduled data of the solar eclipse. In this total solar expedition, astronomers choose those sites of totality belt where the weather will be suitable to observe solar eclipse conspicuously. Gloomy sky and cloudy weather are useless. We must feel proud that our astronomers will take observations of the total solar eclipse conspicuously when climate of south India in mid February remains cool and sky clear.

Different techniques are being used in order to photograph the corona, chromosphere and prominences and also their spectrum. Flash spectrum of corona and chromosphere is recorded by using a simple concave grating pointed directly to the sun with the help of moving coelostate. Twenty seconds of exposure is sufficient to photograph the flash spectrum of corona with the aid of F/6 camera. In the flash spectrum crescent lines are obtained. The changing character of spectrum is recorded by using the moving plate method in which small portion of light from the centre of each crescent line of flash spectrum is allowed to pass through the narrow slit, placed parallel to the spectrum. In this way moving plate of camera records the spectrum with the changing time.

In order to receive knowledge about the chemical composition of the solar corona and chromosphere, the high dispersion spectrographs are used these days.

When the photograph of the sun is taken through the 50 cm telescope (i.e. objective lens has diameter 50 cm) the size of the image of the sun at the focal plane of the objective will be 5 to 10 mm depending on the focal lengths of the lens, which could be photographed with a 35 mm camera from which lens has

been removed. We can also use ordinary photographic plate holder in the focal plane rather than the camera.

The corona is observed during the solar eclipse through a telescope by using a dark glass eye piece which is provided with the Herschel Wedge. Most of the light passed through the wedge resulting no damage to the observers eye. Those who wish to observe the total solar eclipse, they must use either dark coloured goggles or the exposed photographic plate. □

NAEP & Colleges

(Continued from page 599)

get recognition in terms of promotions, appointment to higher positions and for other lucrative assignments. Similarly, students who do good work should be given academic credit and preference in the employment market.

Higher education is assuming an increasingly important role in our educational system and in the life of our country, as it is expected to respond to the new demands arising from the rapid transformation of the society and to the aspirations of individuals for economic cultural and intellectual improvement. In addition to the traditional functions of higher education, teaching, training and research as a means for the transmission and advancement of knowledge and for the provision of qualified manpower, new emphasis is laid now on the obligation to adapt the higher education system to the society in which it operates, and to the many needs of the society. The involvement of institutions of higher education in NAEP is in response to a significant need of the people of this country. □

[Courtesy : Deccan Herald]

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Scientific Cities in India

B. M. Gupta & R. Kundra*

The important considerations for the formulation of a science policy in any country are :

- (i) How much money is being spent on different branches ?
- (ii) Where is the research being done ?
- (iii) How many scientists work in each area ?
- (iv) What fields are being researched and what are their *inter-se* priorities ?
- (v) How is science organized ?

During the last decade and a half, questions (i), (iii); (iv) and (v) have been discussed extensively. However, the question as to the centres of active research has been dealt with only from the organization point of view. The locational aspect has not received much attention. This is an important aspect, as it influences regional development and diffusion of scientific talent in the country specially. In the case of a developing country as vast as India and faced with problems of transport and communication of great magnitude, it assumes an added dimension in the context of equitable dispersal of scientific resources of the country. Inhaber, in his pioneering work on the geographical distribution of Canadian scientific efforts and scientific cities of the world, had discussed the quantitative aspect of this important dimension of science policy.

In an earlier study, the authors dealt with the problems of geographical distribution of scientific efforts in the form of distribution and location of publishing scientists in various states in India.

The main findings of the study have been that the geographical distribution of scientific manpower and location of centres of research have no relationship with the relative richness or poverty of the states. These are also not related to the level of literacy in a particular state. Historically a few of the states and metropolitan cities seem to be preponderant in the scientific wealth of the nation. Secondly, there is ample evidence of concentration effect in the location of scientific research institutions of various kinds in academic institutions, public R & D institutes, etc. This concentration of scientific effort is more the result of unplanned development rather than a matter of deliberate attempt. It is paradoxical that in a society, which had opted for planned development for its social and economic transformation, and had emphasized on the use of science and technology in this process, should have allowed spatial development of its R&D efforts in an unplanned manner. It appears that development and location of scientific effort in India is urban-oriented. In the present study,

we have attempted to determine the development of scientific efforts in various important cities in the country, *in an effort to understand the urban orientation of scientific development.*

Sources of data

The Institute of Scientific Information, Philadelphia (USA) publishes annually "Who is Publishing in Science" (WIPIS). This lists scientists publishing in a particular year in the core journals in all scientific fields all over the world. The institute keeps on increasing its coverage of journals; in 1973 about 2,700 journals were covered. The entries are arranged alphabetically, authorwise, areawise and institutionwise.

We have used WIPIS for the years 1971 and 1975 to compile the citywise distribution of publishing scientists in India. The limitations of using this source of data are :

- (a) It is a list of scientists who have published in a particular year; hence those not publishing have not been recorded.
- (b) In the case of entries with multiple authors only the first name is listed; hence other publishing scientists are left out.
- (c) A small proportion of scientists working in far flung areas of newer institutes in the country like India may not be publishing in the journals covered by the WIPIS. However, their number would be very small, almost negligible.

To overcome these limitations, we make the assumption that the proportion of publishing scientists to non-publishing scientists remains unchanged over a period of time for various geographical locations. There is an advantage in using WIPIS data; it is fairly standardized and covers almost all the journals of significance in science. It can be assumed that WIPIS list contains data about 85% of publishing scientists in India at any point of time.

The data for the number of research institutes, universities and government research departments have been compiled from the Handbook of R&D Statistics 1974-75, published by the Department of Science and Technology, Government of India. The data here would cover almost 95% of research institutes and government departments and about 100 universities. We were not able to lay our hands on the number of colleges with publishing scientists in each state. Here again, the slight deficiency in data would not vitiate the results, as we use the statistics to get an idea about the relative concentration of institutions in various states and cities. Here again

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we are concerned with the order of magnitude, to see if the publishing activities are related with institutional concentration or not.

The data for population of these cities for the year 1971 and based on Census 71 data and it has been projected for the year 1975 at 2.4% annual growth rate. The variation in the growth rate of population of these cities due to migration is assumed to be negligible.

Analysis of data

We have referred to concentration of scientific effort as the main factor explaining the geographical distribution of scientists and their locations in India. In order to probe this factor in depth, we have identified 14 major cities on the basis of the number of scientists located in them and these have been arranged in Table-1 in rank order for 1971. It is seen that five metropolitan cities, Delhi, Bangalore, Bombay, Calcutta and Madras, among themselves account for about 38.9% of the publishing scientists. The first 10 cities account for about 52.6% (approx.) of the scientific population of the country. Between 1971 and 1975 these proportions have changed only marginally. This is the macro picture at the national level.

If we go a little deeper and compare the location of these scientists in these cities with the employment of scientists in the states in which these cities are located, we get a more vivid picture of concentration. Table-2 gives the absolute number of scientists located in various states and 14 important cities. The figures in brackets indicate the relative share of these cities for the states in which they are located. With the exception of Ahmedabad (both in 1971 and 1975) and Madras (1971) and Hyderabad (1975) all the cities account for more than 60% of the publishing scientists of the respective state. In Maharashtra, Pune and Bombay together employ more than 90% of the total publishing scientists of the state. Similarly in Punjab, a small affluent state, Ludhiana and Chandigarh together account for more than 75% of the publishing scientists located in the state. It may be mentioned here that both these cities have developed into important research centres only during the last decade and a half. There has been very little change in the employment of publishing scientist as a fraction of scientists in a particular state. For example, the relative positions of cities like Calcutta, Bangalore, Madras and Ahmedabad have slightly shifted up and those of Chandigarh and Ludhiana (combined), Hyderabad, Bombay and Poona (combined), have gone down slightly. It does not appear logical to conclude from this relative shift that the decrease or increase in the concentration of employment of scientists in these cities represents increased concentration or decentralization of scientific activity in these states.

Calculating the number of scientists in important cities per 10,000 of population and arranging these cities according to normalized numbers we get the following picture as seen in Table-3.

In 1971, the first 4 cities with more than 200 : were Bangalore, Allahabad, Varanasi and Lucknow. This number in 1975 became 5; Delhi and Ludhiana being the new entrants and Allahabad going down the list. The number of cities with the number of scientists lying between 150 and 200 in 1971 was 5 and it remains the same in 1975. The most important category is of cities with publishing scientists between 50 and 99. This category includes important metropolitan cities like Calcutta, Bombay and Madras.

There are various reasons to explain why small cities like Allahabad, Varanasi, Lucknow, Pune, Ludhiana and Jaipur have such a large concentration of publishing scientists. Firstly these are small cities and important universities are located there. With the expansion of science departments and research activities, the proportion of publishing scientists has grown. Historically even cities like Varanasi, Allahabad and Lucknow have been seats of higher learning in Northern India. After independence more institutes came up. In the case of Bombay, Calcutta, Madras and Bangalore the growth of population and various economic activities has been faster and more pronounced. Thus, the proportion of scientists has been outstripped by this growth. Delhi is a special case in itself. It is a city with the status of Union Territory and expansion of scientific activities has been very fast. This could be due to political factors also. The net result is there are 3 universities in the city and 3 institutes with the status of universities. In addition, there are a large number of research and development institutes. It is also noteworthy in this connection that in the case of Delhi all these developments are post-independence phenomena. It may also be mentioned here that the other small cities have also appeared on the science map of India only after independence when either a university or an R&D institution was established there. These institutes have undergone expansion. Another important aspect of growth of these cities is the distribution of the publishing scientists located in these cities, according to the institutes, i.e. whether they are located in academic institutions or R&D institutes.

Table-4 gives the distribution of scientists in universities, government R&D and other institutes. It is seen that Calcutta, Bombay, Delhi, Hyderabad, Pune and Lucknow have more than 75 publishing scientists located in various R&D institutes, the maximum number being in Delhi and Bombay, i.e. 316 and 306 respectively. There are 11 cities that have more than 50 publishing scientists located in the academic institutions. These are: Calcutta, Bombay, Delhi, Madras, Kanpur, Lucknow, Bangalore, Jaipur, Varanasi, Allahabad and Ludhiana. The rest of the cities have preponderance of academic institutions. The six important science cities, i.e. Delhi, Bombay, Calcutta, Hyderabad, Pune and Lucknow in 1971 and 1975 account for 62.6 and 64.3% of the academic institutions for all the cities taken together. This indicates that these cities have continued to be dominant in science

and technology. Their distribution between academic sector and R&D institutes is almost comparable. For example, in 1971 there were 774 locations in academic sector as against 939 locations in R&D institutions. Similarly, in 1975, there were 964 locations in academic sector as against 1287 in R&D institutes. Thus, it appears that the relative position of R&D institutes, vis-a-vis, academic institutes has improved. Perhaps the position of R&D institutions would have been far better, if the scientists from the private institutes were also equally free to publish their scientific findings.

From a recent study Pulparampil has asserted that science and technological developments in India have urban bias and are urban oriented. This is confirmed by the results of the present study. However, there is one snag in this. Is it right to draw this conclusion only on the basis of location of an R&D institution or an academic centre. Should we not consider the orientation of the programmes of research and development at these institutes? Nonetheless the present study brings out the fact that all the cities, where the publishing scientists are located, are seats of

universities and that a number of them have R&D institutes also located there.

Inhaber, in his study on scientific cities suggests that the concentration of scientific efforts depends on the nature of relationship between the scientist and the administrator. If the administrator wants scientists held on short leash, they will like to concentrate them in relatively fewer areas. If there is a more relaxed attitude among administrators towards control of scientific efforts, universities and institute will tend to become more dispersed geographically. The situation in six important cities in India reflects the same tendency of concentration. In this case it was possibly the scientists also who wanted to remain in big metropolitan cities and near the seats of the political power.

To conclude, it can be said that with rising urbanization, there is concomitant increase in the scientific activities in cities. A rough measure is to compare the number of publishing scientists per 10,000 of population. These data can also be used to gauge the extent of centralization of science. □

Table-1

Rank Order of Publishing Scientists by
Science Cities in India in 1971 & 1975

S. No.	City	No. of Publishing Scientists	
		1975	1971
1	Delhi	855	598
2.	Bombay	609	478
3.	Calcutta	503	394
4.	Bangalore	363	226
5.	Lucknow	207	173
6.	Madras	245	167
7.	Varanasi	191	149
8.	Hyderabad	195	145
9.	Kanpur	179	138
10.	Poona	152	137
11.	Allahabad	96	136
12.	Chandigarh	142	97
13.	Ludhiana	111	66
14.	Ahmedabad	110	45

Table 2
Contribution of important cities to number of publishing Scientists in various cities

		Number of Publishing Scientists			
		1975		1971	
		Total No.	%age of cities in States	Total No.	%age of cities in States
A.	UTTAR PRADESH	1095	—	958	—
	Allahabad	96	8.77	136	14.20
	Kanpur	179	16.35	138	14.41
	Lucknow	207	18.90	173	18.06
	Varanasi	191	17.44	149	15.55
B.	DELHI	853	100.00	598	100.00
C.	MAHARASHTRA	832	—	659	—
	Bombay	609	73.20	478	72.53
	Poona	152	18.27	137	20.79
D.	WEST BENGAL	732	—	598	—
	Calcutta	503	68.72	394	65.88
E.	KARNATAKA	523	—	349	—
	Bangalore	363	69.41	226	64.75
F.	TAMIL NADU	428	—	337	—
	Madras	245	57.24	167	49.55
G.	ANDHRA PRADESH	394	—	263	—
	Hyderabad	195	49.49	145	55.13
H.	PUNJAB	328	—	202	—
	Chandigarh	142	43.29	97	48.02
	Ludhiana	111	33.86	66	80.69
I.	GUJARAT	258	—	135	—
	Ahmedabad	110	42.63	45	33.33

Table 3
Number of Scientists in Selected cities per 10000 of Population in 1971 and 1975

Cities with Publishing	1971	1975
I. More than 200 per 10,000 of Population	Bangalore Allahabad Varanasi Lucknow	Bangalore Varanasi Ludhiana Lucknow
II. Between 150 and 200 per 10,000 Population	Delhi Pune Ludhiana Jaipur	Delhi Pune Trivandrum Jaipur
III. Between 100 and 149 per 10,000 of population	Trivandrum	Baroda Hyderabad
IV. Between 50 and 99 per 10,000 of population	Calcutta Bombay Madras Baroda Hyderabad Nagpur Jabalpur	Calcutta Bombay Madras Nagpur Jabalpur Patna
V. Between 25 and 49 per 10,000 of population	Ahmedabad Agra Indore Cochin Madurai Kanpur Surat Jamshedpur Srinagar	Ahmedabad Agra Indore Madurai Jamshedpur Srinagar Kanpur Surat
VI. Less than 25		

Table 4

Distribution of Publishing Scientists by
Institutions

Name of City	1971				1975			
	Total	Universi- ties	Govt. R&D Deptts	Others	Total	Universi- ties	Govt. R&D Deptts	Others
1. Calcutta	394	220	122	52	503	284	216	3
2. Bombay	428	108	306	10	609	145	352	112
3. Delhi	602	273	316	13	—	—	—	—
4. Madras	167	147	13	7	245	215	24	6
5. Hyderabad	145	62	83	—	195	92	100	3
6. Ahmedabad	45	28	9	8	110	39	54	13
7. Kanpur	138	124	13	1	179	139	36	4
8. Nagpur	53	48	4	1	67	58	7	2
9. Pune	137	34	90	13	152	37	100	15
10. Lucknow	173	79	92	2	207	96	107	4
11. Bangalore	226	187	33	6	—	—	—	—
12. Agra	26	24	2	—	24	20	2	2
13. Jaipur	98	95	3	—	98	93	2	3
14. Varanasi	149	149	—	—	191	180	3	8
15. Indore	16	15	1	—	17	17	—	—
16. Madurai	13	13	—	—	—	—	—	—
17. Jabalpur	33	32	—	—	28	28	—	—
18. Allahabad	136	133	—	—	96	83	2	—
19. Patna	23	21	2	—	34	27	6	1
20. Surat	2	2	0	0	34	27	6	1
21. Baroda	40	37	2	1	55	42	4	9
22. Jamshedpur	6	3	3	—	17	8	9	—
23. Cochin	12	3	9	0	n.a.	n.a.	n.a.	n.a.
24. Dhanbad	4	3	1	0	17	5	12	—
25. Amritsar	3	1	2	0	10	10	—	—
26. Trivandrum	41	31	10	—	78	42	32	4
27. Gwalior	12	9	3	—	10	10	—	—
28. Srinagar	5	4	1	—	12	12	—	—
29. Ludhiana	66	64	2	—	111	n.a.	n.a.	n.a.

Agricultural Universities meet at Hissar

The tenth annual convention of the Indian Agricultural Universities Association was held at Haryana Agricultural University, Hissar from 5th to 7th November, 1979. Seventeen Vice-Chancellors of agricultural universities participated and there were in all about 150 delegates from all parts of the country. Shri H.S. Brar, Governor of Haryana in his inaugural address emphasised that the results of agricultural research, unless transferred to the farming community and imbibed by them, would hardly be of any use. Shri Nathu Ram Mirdha, Union Minister of State for Finance, presided at the plenary session held on 7th November. He said

operated with speed and efficiency.

The convention recommended that the transfer of research responsibilities and related facilities in the field of agriculture, animal husbandry, fisheries and farm forestry should be made on a priority basis by the State Governments. The Indian Council of Agricultural Research should play a decisive role in the implementation of this recommendation by persuading the State Governments to complete such transfer within a period of one year. The Council should also desist from allocating centres under the coordinated research projects to the State Governments. The convention

testing and varifying trials of farmers fields,

With regard to essentials of University autonomy, it was recommended that the ICAR should approach to State Governments for speedy actions to amend the Acts of the Universities suitably to bring them in line with the recommendations of the Review Committee and the model act to the extent justified in the light of local conditions. About the implementation of UGC scales, it was felt that ICAR should persuade the State Governments to implement the UGC scales in full within a period of one year. In fact, the Council should make it a pre-condition for continuing financial assistance to these universities. It should also extend financial assistance of 80 per cent for a period of five years from the date of implementation in the case of such universities where the UGC scales are yet to be implemented. One recommendation was that the block grants given to the universities should be reviewed and enhanced at the end of every 5 years to meet the increasing salaries and operational cost.

CAMPUS NEWS

that a scientifically drawn up drought code as well as good weather code should be drawn up so that field benefits could be derived from good season and the damage during unfavourable climate may be minimised. Dr. M.S. Swaminathan, Secretary, Department of Agriculture, Government of India, in his address laid stress on the role of agricultural universities in achieving stability of production under conditions of drought and unfavourable weather.

Dr. P.S. Lamba, President of the Indian Agricultural Universities Association was of the opinion that the financing of agricultural universities by the Indian Council of Agricultural Research and State Governments needs further improvements and strengthening to enable them to fulfil their obligations. He said that the rules and regulations governing the allocations and utilisation of grants needed to be simplified and

also recommended that all the agricultural universities should establish a regional research station in each agro-climatic zone by availing the assistance under NARP. The university should submit an acceptable background paper to the ICAR for a review of research facilities. The transfer of those sub-stations to the universities should be done expeditiously. It was recommended that the formal linkage mechanism with the Department of State Governments should be developed by establishing research, extension liaison committee conducting regional workshops before the commencement of each crop season and discipline-wise annual workshops for the subject matter specialists. It was felt that there was need to clarify the term adaptive research to avoid confusion. The university should be fully responsible for basic and applied research while state governments should be responsible for field

Regarding the significant Lab to Land Programme of transferring the technology, it was recommended that it should be flexible about the size of the demonstration plot. It need not necessarily always be of one acre. It could be even half an acre or less depending upon actual situations. Critical inputs may be included in addition to improved seeds, fertilizer, chemicals, etc. While developing the farm plan care should be taken by the scientists to incorporate suitable alterations in order to cope with the unforeseen constraints like drought, floods, etc. It was stressed that efforts should be made to involve not only agricultural universities to other agencies too. The period of one year is too short for such a programme. In the report of the internal evaluation session chaired by Dr. R. Dwarkanath, Vice-Chancellor, University of Agricultural Sciences, Bangalore, it was recommended that the mark answer book should be positively shown to the students.

Breakthrough in Aquaculture

The Central Marine Fisheries Research Institute has achieved a breakthrough in coastal aquaculture which has immense potential to augment food production and aid in the development of the coastal rural sector. The institute has developed techniques for marine prawn and fish culture, peariculture, open-seal mussel farming, oyster culture and seaweed culture that could not only revolutionise the age old concept of fishing but also help in the socio-economic advancement of the fishermen community. Mr. T. Tholasingam who is in charge of the CMFRI sub-station in Madras said the institute was now executing a scheme for transfer of these modern technologies to the rural areas under the lab-to-land programme of the ICAR. So far about 350 fishermen families in Cochin, Quilon, Calicut, Tuticorin, Mandapam and Madras had been selected to receive the technologies.

This was the first time that fish farmers had been exposed to scientific culture practices. Under the programme, the technologies developed and tested at the institute would be demonstrated to fishermen and fish farmer. Farmers who had small holdings which were seasonally inundated by brackish water and those with perennial fields were encouraged to take up scientific methods.

Women who normally assisted in the family avocations of agriculture of fishery would be trained in the simple techniques of seed collection, feeding and maintenance of ponds so that they could earn additional income. He felt the ordinance promulgated in Tamilnadu recently to provide for leasing of backwater areas to fishermen's cooperatives would help the fishermen to acquire the lake areas along the coast to practise modern methods of aquaculture.

Mr. Tholasingam said that the institute proposes to adopt Karikeattukuppam and Muttukadu villages, about 20 kms south of Madras on the east coast, and to impart training in prawn and

mussel culture there. Two ponds have been dug in the villages and filled with sea water with the help of a windmill for demonstration purposes. The traditional system of prawn culture is extensively practised in Kerala and it has been estimated that about 4,500 hectares of water has come under this system. A local variety of paddy called 'pokkall' is cultivated in these fields during the monsoon period from June to September. Subsequently the field is used for rearing fish and prawns the yield is generally low.

Under the intensive prawn culture scheme ponds are prepared, predators and other organisms eradicated and predetermined quantities of seed of fast growing and high priced species of prawns like *Penaeus monodon* are stocked. Intensive mussel culture involves fixing wooden rafts in selected coastal areas in the depth range of four to six metres and suspension of mussel seed and Breeder stock by ropes. The mussels grow in clusters on the ropes and are ready for harvest in 2½ months. The centre has been facing some problems in regard to lobster culture because of difficulties in spawning the mother under artificial conditions. Seaweed culture had great potential as some seaweeds were essential for certain pharmaceutical preparations.

Bihar Vice-Chancellors meet

The Bihar Inter-University Board has asked the Universities to complete all the pending examinations including those of 1980 by the end of March, 1981 in order to regularise the academic sessions.

The Board, at its meeting held here at Raj Bhawan under the chairmanship of the Chancellor, Dr. A.R. Kidwai, decided to take steps for maintaining the regular schedule of admission in degree and master classes from July 1980. The meeting was attended by the State Minister for Higher Education, Mr. Chandra Shekhar Singh, the Deputy Chairman of the Board, Dr. S.P. Sinha, Vice-Chancellors of Patna, Bihar, Ranchi, Bhagalpur, Magadh, Mithila

and K.S.D. Sanskrit University, the education commissioner, the Chief Secretary, the I.G. of Police and the Home Secretary.

The meeting decided to arrange a crash teaching programme to clear the backlog of examinations and to enable the students to complete their lecture requirements within limited period. The examination programme would be very tight and there would be as many as two sittings per day without any gap. Results would be published within 60 days from the commencement of the examinations.

The meeting also approved the suggestion of the UGC to delink intermediate examination from the University and to make separate arrangements for running the intermediate classes.

GUIDELINES

The Board approved the following guidelines for proper and timely conduct of examinations and publication of results including selection of centres.

(i) All Post-graduate examination will be held only at the headquarters of the University.

(ii) Honours examination shall be held at the headquarters of the University, but where it is difficult to accommodate all the examinees at the headquarters of the University, the Vice-Chancellor may allot centres at suitable old district headquarters.

(iii) Bachelor Pass and Intermediate examinations shall be held at the district headquarters but in case of Intermediate examinations if there is accommodation difficulties, the centres may be allotted even at the old district headquarters.

Vice-Chancellors may transfer the centre of any examination from one college to another as they think fit and proper and this decision will also apply to professional and technical examinations.

(iv) Examination areas will be declared as peace zones and entries shall be restricted only to the bonafide examinees and persons entrusted with examination work. Examinees shall be admitted to the examination rooms on the basis of their admit cards and

they shall not be permitted to carry any reading or any other materials.

(v) Disturbances created by any person so as to prevent bona-fide examinees from taking examination shall be deemed to be act of criminal offence and shall be dealt with according to law.

All possible arrangements will be made by the law and order authorities to provide adequate security to those entrusted with examination work at the examination centres. Those placed on examination duty will be deemed as public servant on duty and any obstruction in the discharge of their duties will be regarded as cognizable offence.

Solar distilled water project for Tamil Nadu

Development of suitable solar distilled water stills for providing drinking water to villages in the coastal area of Tamil Nadu has been taken up by the Centre of Environmental Engineering, Perarignar Anna University of Technology.

As part of the project it is proposed to provide a solar distilled water still with a capacity of 1,000 litres of drinking water per day at a coastal village close to Madras.

Dr. R. Pitchai, Professor of Public Health Engineering Department stated that work had just started on an experimental Unit employing glass and wood and this is being set up at the centre. They would be experimenting with other materials like bricks reinforced with concrete.

Dr. Pitchai said such solar distilled water stills would be very useful in arid coastal regions of Tamilnadu. He said this was one of the first attempts to build a field distilled water producing unit in coastal Tamil Nadu.

Hon'ble Thiru. C. Aranganayagam, Education Minister visited the Centre on 3.10.79 and studied the progress being made. He was accompanied by Prof. P. Sivalingam, the Vice-Chancellor of the University.

The Centre has taken up another project on utilisation of organic kitchen waste for production

of bio-gas as fuel supplement in the hostel mess. A bio-gas unit which can process 60 kg. of kitchen waste per day has been set up. The unit costing Rs. 3,500/- can provide gas for three burners. It has been found that 60% of the gas is methane and the rest carbon dioxide.

The Centre along with the water supply and Drainage Board and the King Institute, Guindy is starting a UNICEF aided project to study the bacteriological quality of rural water supply in Tamil Nadu. The first phase of the study has been initiated in Chingleput District. The UNICEF, besides supplying necessary equipment, would provide the services of six research associates for the project.

The United States Environmental Protection Agency is understood to be favourably considering a proposal submitted by this centre for a survey of the virological quality of water supply in Madras City.

The Centre has also sought assistance from the International Development Research Centre, Canada for a project for re-use of waste water. An international symposium on environmental impact associated with development is also proposed to be held by the Centre towards the end of 1980 with assistance from UNESCO. Another area in which the centre is interested in industrial waste water treatment. It has studied the problem of disposal of tannery wastes in Tamil Nadu and prepared a report on the different types of treatment plants for various tanneries.

Interaction between Industries and educational institutions

A national seminar was organised by KOTHAGUDEM SCHOOL OF MINES with Prof. R.T. Deshmukh as Convener to celebrate the OSMANIA UNIVERSITY DIAMOND JUBILEE YEAR on 10-11 November 1979. The theme of the Seminar was 'INTERACTION BETWEEN EDUCATIONAL INSTITUTIONS AND MINING & MI-

NERAL INDUSTRIES IN THE MATTER OF RESEARCH, INVESTIGATIONS AND TRAINING', and the venue was Mining Engineering Complex, Kothagudem. It was co-sponsored by All-India and State Mining Companies. More than 150 delegates including 40 from outside the State of Andhra Pradesh comprising professors, industry executives and scientists took part by presenting papers and expressing views in four technical sessions.

Several speakers urged that the research and testing facilities available at Kothagudem School of Mines would be fruitfully harnessed in solving several of the problems of mining and mineral industries in the south and suggested a Resource Study Group to be located in Kothagudem School of Mines to take stock of the potential of the area surrounding it with a view to create master-plan for the development of the area.

Mining, being a basic activity providing all industrial products, power and transport, has to grow at a much faster rate than hitherto, to improve the quality of the life of the population.

Research and Development efforts of major thrust have been identified in the following areas :

(i) Conceptual studies relating to distribution of ores in time and space, to help widen our resource base and make some discoveries of 'deficient' minerals.

(ii) Designing development excavations and their linings—shafts and drifts—to be driven through unstable and water-bearing formations and development of expeditions drive methods to cut down on gestation periods.

(iii) Development of new mining systems, including hydraulic, suitable for thick seams of coal and other widebody mineral deposits with their characteristic envelops.

(iv) Determination of suitable parameters for winning machines.

(v) In situ and heap leaching of lean ores of 'deficient' minerals.

(vi) Assessment and control of ground rock mechanics and structural damage due to underground

mining and open pit work and suggesting methods to limit them.

(vii) Finding out suitable methods of extinguishing fires in the coalfield and evolving practical preventive measure for future work.

(viii) Interpreting statistics for use in mine planning and designing of sub-units of a mine system to give a balanced and optimum system.

(ix) Hydraulic transport of solids in pipes—the mechanism and optimum concentration.

(x) Investigation of heat flow in airways to enable design of a proper mine ventilation system for comfortable working conditions—effect of depth.

(xi) Study of ecological problems and finding out remedies for reclaiming subsidised areas and ground damaged by open pit operations.

(xii) Beneficiation of complex base metal sulphides and non-sulphides; recovery of values or agglomeration of, fines; recovery of by-products from ores.

As a fitting finale to the proceedings Sri B.N. Raman Principal Secretary, Department of Social Welfare, Government of Andhra Pradesh, delivered the valedictory address emphasising the role that this institution has to play in the growth of mineral industry so necessary for the country.

Karnataka Universities Review Committee

The Governor of Karnataka in his capacity as Chancellor of the universities in the State has constituted a Universities Review Commission under the Chairmanship of Prof. K.N. Raj, former Vice-Chancellor, of Delhi University and Dr. Jaganath Reddy (former Vice-Chancellor of Sri Venkateswara University) and Prof. C.N.R. Rao (Indian Institute of Science, Bangalore) to review the work done by the three universities, of Bangalore, Mysore and Karnatak and report and recommend on issues related to

(a) past working in all aspects academic (including teaching, research and extension) as well as administrative.

(b) future working and prog-

rammes of these universities in all respects academic and administrative; to suggest the broad outlines of and priorities for their future development.

(c) changes or improvements in the Karnataka State Universities Act 1976 to enable various officers function effectively to realise the objectives enunciated in the Act.

(d) advising on measures to be adopted for meeting the various requirements for the all round development of students including provision for their curricular and extra curricular activities, vocational guidance, hostel accommodation, health and welfare measures etc. as well as for maintenance of discipline among students.

(e) advice on the maintenance of discipline among teachers and employees keeping in view the need for cooperation and coordination between them and among the faculties and departments.

Prof. V. Natarajan of AIU is assisting the Commission at its request to review the examination systems obtaining in these universities and write a chapter of Report dealing with examination practices and desirable changes or reforms for future.

Course on Teaching Methodology and Evaluation

The Centre of Advanced Study in Education, M.S. University of Baroda is organising an All India Short Term Course in Teaching Methodology and Evaluation for college teachers for the first time with UGC assistance on an all India basis. Prof. V. Natarajan of AIU, an Advisory Committee Member of CASE, is running a 4-day programme in the short term Institute on Evaluation in Higher Education, Internal Assessment, Grading and Question Banking.

Nehru fellowship for scientists

The Jawaharlal Nehru Memorial Fund has announced the award of Jawaharlal Nehru Fel-

lowships to Dr. G.P. Talwar, Professor and Head of the Department of Biochemistry at the All India Institute of Medical Sciences, New Delhi and to Dr. T. R. Anantharaman, Professor of Metallurgy at the Banaras Hindu University. The Fellowship is tenable for two years and carries a monthly stipend of Rs. 3,000 and an annual contingency grant of Rs. 10,000.

The Jawaharlal Nehru Fellowships were instituted in 1967 for maintaining the highest standards of excellence in a wide spectrum of creative talent.

This is the first time that the Fellowships have been awarded in these two fields. The Fund had so far awarded sixty fellowships.

Dr. Talwar has been recipient of a number of awards. He is at present working in certain areas which are likely to have far-reaching implications with regard to human fertility and control of communicable diseases. The award would help Dr. Talwar pursue research on immunological approaches to the control of fertility, promotion of fertility in sheep and cattle and immunology of leprosy.

Dr. Anantharaman is a Rhodes scholar at Trinity College, Oxford University and has numerous awards to his credit including the first Homi Bhabha award for research in applied sciences. He would devote his fellowship to a study of the scientific and technological developments in rapid solidification and in the preparation of an up-to-date monograph on "rapidly solidified alloys."

Technology transfer centre for Shillong

The Council of Scientific and Industrial Research has set up a Poly-Technology Transfer Centre for the northern region at Shillong. The above centre sponsored by the North-Eastern Council is expected to assist various State Government Agencies and Union Territories as well as industries in the northern region for solving their scientific and technological problems based on the capabilities existing in more than thirty

CSIR laboratories spread throughout the length and breadth of the country.

The centre will also provide details regarding CSIR and National Research Development Corporation technologies developed in the various research and development institutes in the country and also will initiate necessary actions in promoting technological transfer activities related to the development of the northern region.

The centre will function as a regional centre for technology transfer and will meet the technological needs of various developmental agencies in the region.

Shri K. Lakshminarayan, Senior Scientist of CSIR has been appointed the Project Officer of the centre with headquarters at Shillong.

Place-names to be analysed

Prof. K. S. Hegde, Vice-Chancellor of Mysore University while inaugurating the first all-India conference of the Place-names Society of India at Udupi near Manipal said it was possible that religion, academic interests and production of goods had a bearing on naming places. He said that India was a country of diversities in language and races, but the continuity of thoughts on philosophical, social and cultural life of the people was a unifying factor. Indian names had been adopted in the United States and in many European countries. The Vice-Chancellor exhorted the historians to undertake research into the phenomenon of people living in various parts of the country naming different places identically. He assured that the university will always come forward with support for research into the subject.

Dr. V.I. Subramaniam, Head of the Department of Dravidian Linguistics, University of Kerala, in his presidential address appealed to census authorities and the Election Commission to help the society by making available their data for a descriptive study of the toponymy and its distribution throughout India.

NSS camp at Chimur

The Rashtrasant Tukdoji College, Chimur, affiliated to Nagpur University organised a NSS camp at Khapri Dharmu, a tribal village in the backward district of Maharashtra. During the ten-day camp the student volunteers with the cooperation of villagers undertook projects like removal of encroachments, construction and repair of roads, digging of soak pits and compost pits, anti-addiction programmes, starting of Mahila Mandal and adult education centre, cultural programmes for social awakening and mass mobilisation, health education and care, imparting information on improved agricultural techniques etc.

Shri Jagannathrao Jadhav, Minister for Public Works and Legislative Affairs of Maharashtra also visited the camp and surveyed the various projects undertaken by the campers and expressed his extreme satisfaction at their performance. At the valedictory function, Prof. W.M. Kalmegh, Vice-Chancellor of Nagpur University complimented the NSS volunteers and local villagers for the good work done during the camp.

Sanskrit Vidyapeeths for States

While delivering the convocation address at the Lal Bahadur Shastri Kendriya Sanskrit Vidyapeeth in New Delhi, Dr. Karan Singh, Union Education Minister announced that the Centre has proposed to different States to set up Sanskrit Vidyapeeths. Six such centres have already been set up. The Minister said that these vidyapeeths would help supplement the efforts made by the States for the promotion of Sanskrit. At present more than two hundred students are studying in Shastri and Acharya courses in as many as seventeen subjects. The Rashtriya Sanskrit Sansthan, an autonomous body under the Central Government, has made valuable contributions to the development of Sanskrit and in enriching the cultural life of the country.

ICAR research workshop at Ranchi

The Indian Council of Agricultural Research is holding its eighth research workshop on All-India coordinated research project on utilisation of agricultural by-products and industrial waste materials for evolving economical rations for livestock at Ranchi Veterinary College of the Rajendra Agricultural University. A large number of scientists and research workers from the central and state governments would be participating in the workshop.

The project is aimed at evolving cheap and nutritive feeds for livestock and poultry utilising agricultural, forest and industrial by products and wastes. At present the availability of genuine and good quality feeds at reasonable cost is the major constraint in the sphere of profitable livestock and poultry production.

Madras to amend syndicate composition

A Bill has been introduced in Tamilnadu Legislature for the nomination of the Secretary to the Education Department to the Syndicate of Madras and Madurai Kamraj Universities. Uptil now the Education Secretary was the ex-officio member of the Senate and Finance Committee of these universities. The nomination of the Education Secretary would be more helpful for evolving and coordinating educational policies. It is also proposed to nominate Secretary to the Finance Department or his nominee in the Finance Committee of the two universities instead of the Education Secretary.

Calcutta award for Prof. Salam

The Calcutta University Council at its meeting held recently decided to award the Devi Prasad Sarbadhikary Gold Medal to Prof. Abdus Salam of Pakistan who has been awarded the Noble Prize for Physics this year. The time and venue of handing over the medal would

be decided later by Dr. R.K. Poddar, Vice-Chancellor of the university.

The Calcutta University had earlier recommended the name of Prof. Salam for the award of the Noble prize. The Council resolved to send a message of congratulations to him. The Council also formulated guidelines for starting the M. Phil Science course under the chairmanship of Prof. S.B. Bhattacharjee.

Aizawl courses inaugurated

Dr. A.K. Dhan, Vice-Chancellor of North-Eastern Hill University while inaugurating the postgraduate classes in Aizawl said that the university committed whole-heartedly to the development and progress of the university campuses at Aizawl (Mizoram) and Kohima (Nagaland). He said that the inauguration of the Aizawl Postgraduate classes will go down as a significant landmark in the history of education in Mizoram.

To start with courses in English, Economics and Education would be conducted and other subjects would be added later on.

A similar postgraduate campus in Kohima had already been inaugurated earlier.

Medical college at Bangalore proposed

In pursuance of the recommendations of the Bangalore University, the Karnataka Government has accorded its permission to the M.S. Ramaiah Education Institution to set up a medical college at Bangalore. The college, when established, would be permitted to use the clinical facilities available at the K.C. General Hospital, Malleswaram and the ESI Hospital, Rajajinagar.

Conference at Tirupati

The first conference of the Indian Society for Theory of Probability and its Applications would be held at the Sri Venkateswara University from December 14 to 16. Intending participants may send their abstracts of papers to Prof. M.P. Sastry, Head of the Statistics Department of the university.

Short term course on drilling engineering at ISM

Under the Executive Development Programme, the Indian School of Mines, organised a two-week intensive course on Drilling Engineering. The inputs of the course were very exhaustive and included latest developments of drilling techniques and related to design aspects. The course was consisted of lectures, laboratory work, field visits, group discussions and seminars.

Bangalore Varsity institutes medals

The Bangalore University has accepted the proposals to institute 10 gold medals and prizes including the 37th Indian Political Science Conference Commemoration Gold Medal for the highest marks in Political Science in BA examination of the university.

Semester system abolished in Karnatak Varsity

The Karnatak University has abolished the semester system at the graduate level with immediate effect. The Vice-Chancellor of the university. Mr. S.S. Wodeyar, said that steps would be taken to adjust the fees paid by the students.

IMA opposes rural medical course

The Indian Medical Association has criticised the Maharashtra government's rural health care and short-term diploma course. The Chairman of the Medical Association has on the other hand extended its support to Maharashtra Government for making doctors available for the rural areas provided the government gives them minimum facilities like the basic equipments, medicine, living quarters and communications. The short-term course would only provide the villagers with half-backed doctors which would be detrimental to the health of the people.

The Indian Medical Association has also criticised the move for the so-called integration of various medical systems as willful thinking on which crores of rupees would be wasted.

Classified Advertisement

OSMANIA UNIVERSITY

HYDERABAD -500 007, (A.P.)

Advertisement No. 17/79

November 1979

Applications, in the prescribed form, together with the registration fee of Rs 5/- are invited for the following posts in the University Service so as to reach the undersigned on or before 17th December, 1979.

1. Lecturers in Business Management ...Rs 700-40-1100-50-1600
2. Lecturers in Economics ... -do- (leave vacancies)

Qualifications

Post No. 1: (i) A high second class Master's Degree in any subject which would be relevant to the teaching—of Business Management with Specialisation in Quantitative Methods/Marketing Research/Business Policy/Production Management at Post Graduate level from an Indian University or an examination recognised as equivalent thereto.
(ii) Sufficient evidence of research interest in Management Studies.

Post No. 2: (i) Consistently good academic record with 1st or high 2nd class Master's Degree in Economics/Statistics with 55% (B+) marks in the aggregate from an Indian University or an equivalent degree of a foreign University.
(ii) A Doctor's Degree or research work of an equally high standard.

Specialisation: Statistics/Econometrics.

A G E: Not above (35) years.
i) Age limit does not apply to the employees of this University.
ii) Age relaxation can be considered in deserving cases.

Explanation to the Advertisement No. 16/79.

The Specialisation mentioned in this Advertisement also applies to the post of Reader in Business Management, advertised vide No. 16/79.

Application forms can be had from the Director, Dept of publications and University Press, Osmania University Hyderabad-7, A.P. on payment of Rs 4.50 in person or by money order or by a postal order UNCROSSED made payable to the Director, University Press and by sending a self-addressed envelope (11½ × 26½ cms) duly stamped for ordinary or registered post.

A latest passport size photograph should be affixed on the application form.

B. Ramachandra Reddy
REGISTRAR

Conferences, Seminars & Workshops

December, 1979—January, 1980

Date	Subject	Venue	Sponsoring Body
3 Dec.—5 Dec.	Corrosion in mines: a seminar	Dhanbad	Indian School of Mines
3 Dec.—8 Dec.	International conference on liquid crystals	Bangalore	Raman Research Institute
4 Dec.—7 Dec.	First National Conference on Yoga Science & Society	Varanasi	Inst. of Med. Sciences
4 Dec.—8 Dec.	Fourth Asian Cancer Conference	Bombay	Tata Memorial Centre & Indian Cancer Society
4 Dec.—15 Dec.	Management of human resources	Hyderabad	Admin. Staff College
5 Dec.—7 Dec.	6th Nat. Conference on I.C. engines and combustion	Bombay	I.I.T.
5 Dec.—14 Dec.	Workshop on restructuring the syllabus in English	Tirupati	Sri Padmavathi Women's College
8 Dec.—12 Dec.	International Symposium on environmental cancer	Bombay	
10 Dec.—14 Dec.	XX International Conference on coordination chemistry	Calcutta	
10 Dec.—15 Dec.	Production Management	Ahmedabad	Nat. Productivity Council
13 Dec.—14 Dec.	National Solar energy convention 1979	Bombay	Solar Energy Society of India
13 Dec.—15 Dec.	National Seminar on fertiliser marketing & use	New Delhi	Fertiliser Association of India
14 December 79.	Seminar on how accurate is the census count? An analysis of the 1951, 1961 & 1971 check.	Delhi	Inst. of Economic Growth
17 Dec.—19 Dec.	First joint scientific conference of the Physicians of Indian Association & the Indian Medical Association	New Delhi	Indian Medical Association
18 Dec.—20 Dec.	Planning for Electrical energy	Hyderabad	Admin. Staff College
18 Dec.—22 Dec.	VI Asia/Pacific Congress on diseases of the chest	Bombay	
19 Dec.—21 Dec.	2nd National Conference on Corrosion & its control	Calcutta	Society for the advancement of Electro-chemical Sc. & Technology
19 Dec.—22 Dec.	International Symposium on Development & Behaviour of Drosophila	Bombay	Tata Inst for Fundamental Research
22 Dec.—25 Dec.	32nd Annual session of Indian Inst of Chemical Engineers	Bombay	Tata Inst of Chemical Engineers
26 Dec.—29 Dec.	XII All India Conference of IASLIC	Roorkee	IASLIC
27 Dec.—29 Dec.	Technological forecasting	Hyderabad	Admin. Staff College
28 December 79.	Workshop on capital intensity & productivity in small scale manufacturing industry	Delhi	Inst of Economic Growth
28 Dec.—30 Dec.	55th All India Medical Conference	Kanpur	Indian Medical Association
28 Dec.—30 Dec.	28th Annual Conference of the Anatomical Society of India	Bombay	Anatomical Society of India
December 79 (15 Days)	Modern power station operation	Hyderabad	Institution of Engineers
December 79	23rd General Conference of International Atomic Energy Agency	Delhi	I.A.E.A.
4 Jan.—14 Jan.	Winter School on crystallographic computing techniques	Bangalore	Indian Institute of Science
7 Jan.—11 Jan.	Managing small industries	New Delhi	Nat. Productivity Council
7 Jan.—12 Jan.	Spare parts management	Hyderabad	Admin. Staff College of India
12 Jan.—16 Jan.	23rd Technical convention of I.E.T.E.	Delhi	Inst of Electronics & Telecommunication Engineers
17 Jan.—19 Jan.	11th National Conference on crystallography	Calcutta	Nat Committee for Crystallography (INSA) & Indian Assoc for the Cultivation of Science
17 Jan.—19 Jan.	International symposium on hundred years of malaria research	Calcutta	Inst of PG Medical Educ. & Research
20 Jan.—23 Jan.	34th Joint Annual conference of the Association of Physicians of India	Trivandrum	Association of Physicians of India
21 Jan.—23 Jan.	International symposium on Leishmaniasis	Delhi	Nat Inst of Communicable Diseases
21 Jan.—26 Jan.	Institution Building	Hyderabad	Admin. Staff College of India
29 Jan.—31 Jan.	International workshop on aerobiology	Calcutta	
29 Jan.—1 Feb.	Workshop on the state of the economy	Hyderabad	Admin. Staff College of India
January 1980	Diamond Jubilee of the Institution of Engineers	Calcutta	Institution of Engineers
January 1980	International Conference of obstetricians & gynaecologists	Bangalore	
January 1980	Workshop on Microbial procedures in antibiotic resistance in bacteria	Delhi	Lady Hardinge Medical College

Subject Index

Date	Subject	Venue	Sponsoring Body
Agriculture			
13 Dec.—15 Dec.	National Seminar on fertiliser marketing and use	New Delhi	Fertiliser Association of India
Computers & Mathematics			
4 Jan.—14 Jan.	Winter School on crystallographic computing techniques	Bangalore	Indian Inst. of Science
Economics			
29 Jan.—1 Feb.	Workshop on the state of the economy	Hyderabad	Admin. Staff College
Energy Sources			
December 1979 (15 days)	Modern power station operation	Hyderabad	Institution of Engineers
13 Dec.—14 Dec.	National solar energy convention, 1979	Bombay	Solar Energy Society of India
18 Dec.—20 Dec.	Planning for electrical energy	Hyderabad	Admin. Staff College
December 1979	23rd General Conference of International Atomic Energy Agency	Delhi	I.A.E.A.
Engineering			
January 1980	Diamond Jubilee of the Institution of Engineers	Calcutta	Institution of Engineers
19 Dec.—21 Dec.	2nd National Conference on Corrosion and its control	Calcutta	Society for the advancement of Electro-chemical Sc. & Technology
5 Dec.—7 Dec.	6th Nat. Conference on I.C. engines and combustion	Bombay	I.I.T.
22 Dec.—25 Dec.	32nd Annual session of Indian Inst of Chemical Engineers	Bombay	Indian Inst of Chemical Engineers
12 Jan.—16 Jan.	23rd Technical convention of I.E.T.E.	Delhi	Inst of Electronics & Telecommunication Engineers
Language & Literature			
5 Dec.—14 Dec.	Workshop on restructuring the syllabus in English	Tirupati	Sri Padmavathi Women's College
Library & Information Sciences			
26 Dec.—29 Dec.	XII All India Conference of IASLIC	Roorkee	IASLIC
Life Sciences			
19 Dec.—22 Dec.	International symposium on Development and Behaviour of Drosophila	Bombay	Tata Institute for Fundamental Research
29 Jan.—31 Jan.	International Workshop on Aerobiology	Calcutta	
Management			
4 Dec.—15 Dec.	Management of human resources	Hyderabad	Admin. Staff College
7 Jan.—11 Jan.	Managing small industries	New Delhi	Nat. Productivity Council
10 Dec.—15 Dec.	Production Management	Ahmedabad	Nat. Productivity Council
7 Jan.—12 Jan.	Spare parts management	Hyderabad	Admin. Staff College of India
27 Dec.—29 Dec.	Technological forecasting	Hyderabad	Admin. Staff College of India
28 December	Workshop on Capital intensity & productivity in small scale manufacturing industry	Delhi	Inst of Economic Growth
Medicine & Public Health			
28 Dec.—30 Dec.	55th All-India Medical Conference	Kanpur	Indian Medical Association
17 Dec.—19 Dec.	First joint Scientific conference of the Physicians of India Association and the Indian Medical Association	New Delhi	Indian Medical Association
4 Dec.—8 Dec.	4th Asian Cancer Conference	Bombay	Tata Memorial Centre & Indian Cancer Society
January 1980	International Conference of obstetricians & gynaecologists	Bangalore	
8 Dec.—12 Dec.	International symposium on environmental cancer	Bombay	
17 Jan.—19 Jan.	International symposium on hundred years of malaria research	Calcutta	Inst of PG Medical Education and Research
21 Jan.—23 Jan.	International symposium on Leishmaniasis	Delhi	Nat Inst of Communicable Diseases
18 Dec.—22 Dec.	VI Asia/Pacific Congress on diseases of the chest	Bombay	
20 Jan.—23 Jan.	34th Joint annual conference of the Association of Physicians of India	Trivandrum	Association of Physicians of India
8 Dec.—30 Dec.	28th Annual Conference of the Anatomical Society of India	Bombay	Anatomical Society of India
January 1980	Workshop on microbial procedures in antibiotic resistance in bacteria	Delhi	Lady Hardinge Medical College
Mining & Mineral			
3 Dec.—5 Dec.	Corrosion in mines: a seminar	Dhanbad	Indian School of Mines
Physics & Chemistry			
17 Jan.—19 Jan.	11th National Conference on Crystallography	Calcutta	Nat Committee for crystallography (INSA) & Indian Assoc. for the cultivation of science
3 Dec.—8 Dec.	International Conference on liquid crystals	Bangalore	Raman Research Institute
10 Dec.—14 Dec.	XX International Conference on coordination chemistry	Calcutta	
Public Administration			
14 December 79	Seminar on how accurate is the census count? An analysis of the 1951, 1961 & 1971 check.	Delhi	Inst of Economic Growth
Yoga			
4 Dec.—7 Dec.	First National Conference on Yoga Science and Society	Varanasi	Institute of Medical Sciences

Further details can be had from:
The Librarian, British Council Library,
AIEACS Building, Rafi Marg, New Delhi-110001

SOUTH GUJARAT UNIVERSITY

UNIVERSITY CAMPUS, UDHNA-MAGDALLA ROAD,
POST BOX NO. 49, SURAT-395007.

In continuation of the advertisement of 2nd November, 1979 for teaching posts in the Post-Graduate Departments of the University, the specialisation required for the following teaching posts is indicated below:

Sr. No.	Post-Graduate Department	Post	Specialisation
(1)	Public Administration	Lecturer	Specialisation in one or more of the following areas: 1. Techniques of Administrative Improvement. 2. Extra Departmental Agencies. 3. Personnel Administration.
(2)	Rural Studies	Lecturer	Qualifications in Sociology with Rural Sociology, tribal anthropology or Social Work with specialisation in rural community organisation and management of rural institutions or Master of Rural Studies with experience of research and teaching as per University rules.

G.A. Desai
REGISTRAR

INDIAN INSTITUTE OF TECHNOLOGY KHARAGPUR

Advertisement No. R/10/79

Applications are invited for the undermentioned posts at the Indian Institute of Technology, Kharagpur, West Bengal:—

POSTS

I. PROFESSORS

Scale of Pay

Rs. 1500-60-1800-100-2000-125/-2-2500/- plus D.A. as admissible.

Age: Preferably below 50 years.

Qualifications

Essential: (i) A good academic record with a Bachelor's or Master's degree in the appropriate branch and a Doctorate degree. (ii) Twelve years experience in the field of specialisation prescribed, of which at least 5 years should be in teaching and/or research. (iii) Published research work of good quality in Journals of repute. (iv) Experience in guiding research.

Desirable

- (i) Experience of teaching post-graduate classes,
- (ii) Good design and/or industrial experience.

N.B.: If a person is not found suitable for the post of Professor, he may be offered the post of Associate Professor in the grade of Rs. 1500-2000/-

Vacancies & Specialisation

- (i) Computer Centre (Two posts)

Specialisation in one or more of the following:

- (a) System hardware. (b) System software. (c) Application software.

- (ii) Cryogenic Engineering Centre (One Post)

Specialisation in Cryogenic system

Design. He will be responsible for initiating and planning research programme in Cryogenics Systems, and for developing and organising Cryogenic Engineering Laboratories.

- (iii) Electronics & Elect. Communication Engg. Deptt. (One post)

Specialisation in one of the following:

- (a) Computer Engineering. (b) Control Systems & Industrial electronics and (c) Microelectronics & Semi-conductor devices.

- (iv) Radar Communication Centre (One post)

Specialisation in one or more of the following:

- (a) Microwave Antennas. (b) Millimeter Wave Systems. (c) Digital Communication Systems. (d) Fibre Optics.

II. ASSISTANT PROFESSORS

Scale of Pay

Rs. 1200-50-1300-60-1900/- plus D.A. as admissible.

Age: Preferably between 30 and 45 years.

Qualifications

Essential: (i) A good academic record with a Bachelor's or Master's degree in the appropriate branch and a doctorate degree, (ii) Seven years' experience in the field of specialisation prescribed, of which at least 2 years should be in teaching and/or research.

Desirable

- (i) Published research work of good standard.
- (ii) Experience in guiding research.

Vacancies & Specialisations

- (i) Aeronautical Engineering Department (Two posts—both temporary)

Specialisation in one or more of the following:

- (a) Aircraft Structures. (b) Aerodynamics. (c) Propulsion.

- (ii) Civil Engineering Department (Two posts)

Specialisation

For one post

Structural Engineering (Steel Structure)

For the other post

One or more of the following:

- (a) Water Resource Engineering. (b) Soil Mechanics & Foundation Engineering. (c) Environmental Engineering and Sanitation.

- (iii) Electronics & Elec. Comm. Engineering Department (One post)

Specialisation in any one of the following:

- (a) Control System Engineering. (b) Computer Engineering. (c) Microwave Engineering. (d) Communications Systems and (e) Semi-conductor devices.

- (iv) Industrial Management Centre (Two posts)

Specialisation in one or more of the following:

- (a) Financial Management. (b) Marketing Management. (c) Industrial Engineering & Operations Research. (d) Maintenance Engineering & Management.

Desirable

First class Bachelor's degree in any branch of Engineering.

- (v) Mathematics Department (Two posts)

Specialisation in any one of the following branches:

- (a) Pure or Applied Mathematics. (b) Statistics or Operation Research. (iv) Radar and Communication Centre (Four posts)

Specialisation in one or more of the following:

- (a) Millimeter Wave Systems. (b) Microwave Engineering. (c) Digital Communication Systems. (d) Fibre Optics.

III. ASSISTANT PROFESSOR (LIAISON OFFICER) Industrial Consultancy Centre—One temporary post of 2 years' duration in the first instance, likely to continue.

Scale of Pay and Age:

As stated in the case of Assistant Professors in para II above.

The qualifications for this post are as stated above for the post of Assistant Professor in any branch of engineering or technology.

The person recruited shall assist the Dean of Sponsored Research & Consultancy in organising the Industrial Consultancy Centre of the Institute. He will also be the Liaison Officer between the industries of the region and the Institute with a view to promoting consultancy activities.

IV. LECTURERS

Scale of Pay

Rs. 700-40-1100-50-1600/- plus D.A. as admissible.

Age: Preferably between 23 and 38 years.

Qualifications: Essential

- (i) A good academic record with a Master's degree in the appropriate branch. (ii) Two years' professional experience.

Desirable: A doctorate degree.

Vacancies & Specialisation

- (i) **Agricultural Engineering Department (Two posts)**—One post temporary for 2 years in the first instance and likely to continue.

Specialisation

for Lecturer (Permanent)—Dairy & Food Engineering.

for Lecturer (Temporary) — Any branch of Agricultural Engineering.

- (ii) **Chemical Engineering Department (Two posts)**

Specialisation in the following fields:

- (a) Petroleum Refinery Engg. & Petrochemicals.

- (b) Mineral Engineering.

- (iii) **Civil Engineering Department (One post)**

Specialisation in Highway and Traffic Engineering.

- (iv) **Electronics & Elect. Comm. Engg. Department (Three posts)**

Specialisation in one of the following:

- (a) Control System. (b) Computer.

- (c) Micro-electronics.

- (v) **Radar and Communication Centre (Three posts)**

Specialisation in Microwave Engineering or Digital Communication.

- (vi) **Mathematics Department (One post)**

Specialisation in any branch of Pure or Applied Mathematics, Statistics or Operation Research.

- (vii) **Mechanical Engineering Department (Three posts)**

Specialisation in one of the following fields:

Mechanics of Solids, Mechanical Handling Science, Engineering Design, Refrigeration and Air-conditioning, I.C. Engines & Gas Turbines, Modern Manufacturing processes and Machine Tools.

Note: The following are applicable to posts of Professor, Assistant Professor and Lecturer.

- (a) In all cases experience means experience gained after obtaining the Master's degree.

- (b) For the post of Industrial Management Centre, if suitable candidates with prescribed essential qualifications are not available then the minimum educational requirements may be relaxed.

- (c) Relaxation of the minimum educational requirements may also be done in the case of candidates having outstanding research achievements or long and meritorious industrial/design experience.

- V. ACCOUNTS OFFICER (One post)** — Temporary for one year because the designation is likely to be changed and the post upgraded.

Scale of Pay

Rs. 840-40-1100-EB-40-1200/- plus D.A. as admissible.

Age: Above 30 years.

Qualifications & Experiences: Essential

- (1) Good degree in Arts, Science, Commerce or Business Management.

- (2) Passed Sub-ordinate Accounts Service Examination of Government or the Examination of the Indian Institute of Chartered Accountants or the Indian Institute of Costs and Works Accounts or equivalent.

- (3) About 5 years' experience in a Govt. Department or in a business organisation of repute in (a) the administration of financial matters such as budget, accounts, rules & regulations relating to expenditure and (b) cost of production of articles manufacture in workshops.

VI. STORES OFFICER (One post)—

Post temporary for one year for the present because the designation is likely to be changed and post upgraded.

Scale of Pay

Rs. 700-40-900-EB-40-1100-50-1300/- plus D.A. as admissible.

Qualifications & Experiences Essential :

Degree in Arts or Science or a National Certificate in Electrical/Mechanical Engineering, Diploma in Business Management or equivalent preferable. Seven years' experience in purchasing engineering stores, some knowledge of storekeeping and management and workshop experiences.

VII. ASSISTANT REGISTRAR (One post)

Scale of Pay

Rs. 700-40-900-EB-40-1100-50-1300/- plus D.A. as admissible.

Age: Ordinarily not below 30 years.

Qualifications & Experiences: Essential

- (1) Good degree in Arts, Science, Commerce or Business Management.

- (2) Must have good knowledge of procedure of general administration or accounting of Cash and other transactions, preferably both, and be able to draft reports and minutes of conferences.

- (3) At least 10 years' experience in a responsible position under Government or in a large educational Institution or business organisation of repute.

Desirable: Experience of supervision of recruitment work, meetings and conference work, examination work, students' welfare work and proved capacity to understand students and their problems.

VIII. SENIOR PHYSICAL TRAINING INSTRUCTOR (Two posts)—One post is reserved for Scheduled Caste/Scheduled Tribe candidates.

Scale of Pay :

Rs. 700-40-900-EB-40-1100-50-1300/- plus D.A. as admissible.

Qualifications Essential :

- (1) Master's degree in Physical Education (two-year course) or a Master's degree in Arts/Science with a Diploma in Physical Education from a recognised university. A minimum of 7 years' experience at University level in handling sports, games and cultural activities is essential.

OR

A Bachelor's degree in Physical Education or a Bachelor's degree in Arts/Science with a Diploma in Physical Education from a recognised University. A minimum of 10 years' experience at University level in handling sports, games and cultural activities is essential.

- (2) Organisational and administrative ability with a working knowledge in accounts, preparation and maintenance of courts and play-grounds.

- (3) Proficiency in sports and games.

Desirable: (1) Diploma from NIS.
(2) Proficiency in Music and Dramatics.

IX. HOMOEOPATH MEDICAL OFFICER (One post)

Scale of Pay

Rs. 650-30-740-35-810-EB-35-880-40-1000-EB-40-1200/- plus D.A. as admissible.

Age: Not exceeding 35 years. (Not exceeding 40 years for Scheduled Castes and Scheduled Tribes candidates). Relaxable for Government Servants.

Qualifications : Essential

- (i) B.M.S. (Homoeopathy), D.H.M., D.M.S. (Homo), B.M.B.S. or M.H.M.S., D.H.S. or equivalent diploma (4 year's course) or G.H.M.S. degree (Agra) or equivalent.

- (ii) At least five years of Homoeopathic practice in a recognised hospital or dispensary.

Note: The period of service rendered by the Doctors who were drafted to serve the Defence Forces under Compulsory Liability Scheme is counted in reckoning experience.

Desirable: (1) B.Sc. or equivalent degree in Science from a recognised University. (2) Post graduate diploma/degree in Homoeopathy.

Duties: (1) Medical attendance & treatment of Institute employees, members of their families, and other beneficiaries covered under the Institute Medical Rules.

- (2) To pay domiciliary visits at the residences of beneficiaries in case of emergency or whenever considered essential.

- (3) Any other duty that may be assigned to them from time to time.

X. ASSISTANT ENGINEER (MECHANICAL) (One post)

Scale of Pay:

Rs. 650-30-740-35-810-EB-880-40-1000-EB-40-1200/- plus D.A. as admissible.

Age: Not less than 30 years.

Qualifications & Experiences Essential :

- (a) A graduate in Mechanical Engineering or equivalent with a minimum experience of 3 years of which at least 2 years should be construction, maintenance and design experience.

- (b) Experience in maintenance and operation of refrigeration and air-conditioning plants, room air-conditioning and water coolers.

- (c) Experience of maintenance and servicing of petrol and diesel driven vehicles.

XI. ASSISTANT ENGINEER (HORTICULTURE & SANITATION) (One post) Reserved for Scheduled Tribe candidates

Scale of Pay

Rs. 650-30-740-35-810-EB-35-880-40-1000-EB-40-1200/- plus D.A. as admissible.

Qualifications

A graduate in Engineering preferably in public Health Engineering or Agricultural Engineering or Civil Engineering with about 3 years of relevant experience or diploma (Three year, diploma) in Public Health Engineering or Agricultural Engineering or Civil Engineering with about 7 years of relevant experience in a large organisation/undertaking etc.

Job Requirements

- (i) Able to prepare estimates, design and supervise civil construction works in sanitary works and water works and able to organise and supervise municipal services like sewage systems, garbage clearance, water systems, mosquito control works, road maintenance and Horticultural works etc.
- (ii) Able to handle departmental staff and organise municipal services including handling and maintenance of stores.
- (iii) Any other work as may be assigned by this superior in-charge or director.

XII. ENGINEER (AUDIO VISUAL CELL) (One post)

Scale of Pay

Rs. 700-40-1100-50-1300/- plus D.A. as admissible.

Age : Between 30 and 45 years.

Qualifications : Essential:

(i) Bachelor's degree in Electronics & Electrical Communication Engineering or equivalent. (ii) At least 5 years' experience in repair, design, fabrication, development and production of Audio Visual equipment and entertainment electronic.

Desirable: Experience in servicing and repairing sophisticated equipment related to Audio Visual Unit.

XII. ENGINEER (SHIFT) (One post)— (Reserved for Scheduled Caste candidates).

Scale of Pay

Rs. 700-40-1100-50-1300/- plus D.A. as admissible.

Age: Preferably between 25 and 38 years.

Qualifications, Experiences & Duties

Bachelor's degree in Electrical or Electronics Engineering with at least three years' experience, in maintenance, design and/or development on a modern computer system.

He will be responsible for hardware maintenance and assisting the senior engineer in training inventory of spare-parts etc. He may be assigned shift duty. Experience requirements may be relaxed for candidates with Post-graduate qualifications in computer technology. If suitable candidates are not available, candidates having lesser experience and requisite qualifications may be considered.

N.B. Intending candidates must have high academic background and must have experience particularly in management, operation and maintenance of large computer. Preference will be given to those having long experience in a large computer installation in a University/Research Institution inside or outside India.

XIII. SENIOR RESEARCH ASSISTANTS

- (a) Cryogenic Engineering Centre (One post)
- (b) Central Analytical Laboratory (One post)
- (c) Computer Centre (One post)
- (d) Physics & Meteorology (Two posts)
- (e) Radar & Comm. Centre (Five posts)—2 posts reserved for SC/ST

Scale of Pay

Rs. 550-25-750-EB-30-900/- plus D.A. as admissible.

Qualifications & Experiences

(a) for Cryogenic Engineering Centre

Essential: A good Bachelor's degree in Engineering/Science. Adequate research experience in cryogenic technology/vacuum circuit design and Instrumentation.

Desirable: Research experience in Cryogenic Engineering.

(b) for Central Analytical Laboratory

B.Sc./B.Tech. in Electronics or M.Sc. in Chemistry with good knowledge of electronics with at least one year's experience in handling and maintaining sophisticated electronic equipment.

or

B.Sc. in Chemistry/Physics with good knowledge of electronic with at least three years' experience in handling and maintaining electronic equipment.

Desirable: Ability to run and maintain analytical instruments (like derivatograph, Gas chromatograph, I.R.N.M.R., Atomic Absorption Spectrometers, Mass Spectrometer, Sorptometer, Massbauer and other sophisticated electronic equipment) and process analytical data.

(c) for Computer Centre

Either: A Bachelor's degree in Electrical Engineering / Electronics Engineering.

OR Post graduate degree in Science with exposure to Computer Programming.

Job Requirements

Either: Sound knowledge of Modern Computer Hardware and ability to diagnose faults in the digital circuits.

OR

Sound knowledge of High Level Language like Fortran IV Cobol, PL/I etc. and ability to debug and write programmes.

(d) for Physics & Meteorology

Essential: (i) Bright academic carrier with preferably a first class M.Sc. degree with specialisation in X-ray and Crystallography. (ii) Two years' experience in a reputed X-ray laboratory in operating, handling and maintaining X-ray apparatus and cameras of all types and/or electron microscope including electron diffraction attachments. (iii) Good knowledge of dark room practice, high vacuum techniques and electronic computers.

Desirable: (i) Ability to carry out reputed type of X-ray analysis and conduct special precision type of experiments under guidance. (ii) Ability to design and fabricate high vacuum and electronic appliances. (iii) Workshop experience. (iv) Ability to demonstrate and explain experiments.

Job Requirements: (i) Running, maintaining and repairing apparatus.

(ii) Building up of new instruments and setting up of new experiments.

(iii) Carrying out routine measurements, calculations, calibrations etc.

(e) for Radar & Communication Centre

Essential: First class Bachelor's degree in Electronics and Communication Engineering or equivalent.

Desirable: One year research experience

in the field of Microwave Engineering/ Digital Communication.

Application forms may be had from the Registrar on request along with an unstamped self-addressed envelope of size 23 cm x 10 cm. Applications accompanied with an application fee (non-refundable) of Rs. 7.50 (Rs. 1.87 for SC/ST candidates) for category No. I to XII and Rs. 3.00 (Rs. 0.75 for SC/ST candidates) for category No. XIII payable by means of crossed Indian Postal Order to the Indian Institute of Technology, Kharagpur at Kharagpur—2 Post Office should reach the Registrar, IIT, Kharagpur by the 31st December 1979.

Applicants who are in the employment of Government/Semi-Government organisations or of any Government undertaking must send their applications through proper channel.

A.K. Sur
REGISTRAR

THE UNIVERSITY OF BURDWAN

RAJBATI : BURDWAN
WEST BENGAL

Advertisement No. 8/79-80
Dated, 16th November, 1979

Applications in the prescribed form are invited for the post of Reader in Law in the scale of pay of Rs. 1200-50-1300-60-1900/- plus dearness and other allowances, pensionary benefits according to the rules of the University.

Department of Law

Readership in Law — Two posts
(Permanent)

Minimum Qualifications

1. (a) A doctor's degree or published research work of an equally high standard, and
- (b) Consistently good academic record with first or high second class (B in the seven point scale) Master's degree in Law or an equivalent degree of a foreign University.
2. **Specialisation or Proficiency**
Administrative Law / Taxation Law/Interpretation of Statutes and principles of Legislation/Constitutional Law/Legal Remedies/Commercial Laws and/or any branch of procedural Laws.

The University Council may on recommendation of the appropriate Selection Committee, waive any of the requirements in view of the candidate's specialised knowledge in the subject. The choice of the Committee may not necessarily be confined to those who apply formally.

For application form and other information apply to the Registrar with a self-addressed stamped (0.40p.) envelope (9" x 4").

Last date for submission of application with the requisite fee of Rs. 5/- is 5th December, 1979.

A.K. Chaudhuri
REGISTRAR

A list of Doctoral Theses Accepted by Indian Universities

SOCIAL SCIENCES

Psychology

1. Nagar, Urmila B. Role of note-taking, rehearsal and test events on immediate and delayed reproduction of verbal materials. Banaras Hindu University.
2. Singh, Indramani Lal. Visual vigilance performance as affected by induced shock, duration of presentation, irrelevant auditory stimulation, expectancy and anxiety. Banaras Hindu University.
3. Yadav, J. R. Personality of high risk takers and low risk takers among Indian railway drivers. Kanpur University.

Social Work

1. Bhanti, Raj. A study of the welfare programmes in Rajasthan with special reference to women and children. University of Udaipur.
2. Shariff, I. A. A study of social work measures with anxiety neurotics. Bangalore University.

Sociology

1. Chandrabai, M. Changes in status, attitude, choice and aspirations of Hindu urban women. University of Madras.
2. Das, M. A. Rosy. Women's education in Assam in the post-independence period (1947-71) and its impact on the social life of the state. Gauhati University.
3. Deb, Keya. Tea plantations in the Brahmaputra Valley, 1839-1914: A case study in a colonial setup. Jawaharlal Nehru University.
4. Kak, Shakti. Technical inputs and Agricultural development: Regional variations—A case study of Haryana. Jawaharlal Nehru University.
5. Kalra, S.S. Social distance among castes in rural Uttar Pradesh. Kanpur University.
6. Kamaraju, Malyala Syamasundar. Social change amongst the jute mill workers Nellimarla, Andhra Pradesh. Andhra University.
7. Kothari, Kalu Lal. Tribal social change in Rajasthan. University of Udaipur.
8. Manjeet Kumar. Social and psychological factors in stress among psychosomatic patients: A comparative sociological study based on clinical and normal cohorts. Banaras Hindu University.

Political Science

1. Goel, Rajeshwari. Advisory jurisdiction of the Supreme Court of India. Banaras Hindu University.
2. Kakrambe, Shripalrao Adappa. Karmaveer Bhaurao Patil: A study of socio-educational reforms and impact on politics of Western Maharashtra, 1919-1960. Shivaji University.
3. Kumar, Manju. The right to equality under the Indian Constitution with reference to social equality. Banaras Hindu University.

Economics

1. Bihari, Swarnalekha. Human resources for economic development with reference to India. Banaras Hindu University.
2. Chauhan, J. B. Singh. Employment, income and consumption pattern of agricultural labour in Ballia. Kanpur University.
3. Pande, P. C. A study of changes in economic condition of scheduled castes in Kumaon since independence. Kumaon University.
4. Pande, P. N. Manpower utilization and inter-strata income differentials in rural Kumaon. Kumaon University.
5. Rai, Rajendra. Taxation of wealth in India. Banaras Hindu University.
6. Ramachandran, Nira. Commodity flows and the regional organisation of the Indian economy. Jawaharlal Nehru University.

7. Shah, V. R. Economic analysis of India's exports to USA. Gujarat University.

8. Shrivastava, A. K. Role of I.D.B.I. and I.F.C.I. in industrial growth of India. Kanpur University.

9. Tongo, Arun Balwant. A study of some aspects of India's economic relations with the Soviet Union, 1950-74. Nagpur University.

10. Tulsyan, Shankar Lal. Agriculture in the economy of the Kosi Development Area: A study in the growth of income and employment. Bhagalpur University.

Law

1. Pradhan Chandra Mohan. Dr. P. B. Gajendra Gadkar and his labour law philosophy. University of Udaipur.

Public Administration

1. Balasubramanian, R. Organization and management of Tamil Nadu Electricity Board: A study in public management. Banaras Hindu University.

Education

1. Bhatnagar, Jagdish Narain. An investigation into the values, aspirations and personality traits of adolescents of Rajasthan. University of Udaipur.
2. Samal, Sarbeswar. Construction of vocational interest inventory to study the interest pattern of the high school seniors and its relationship with their intelligence, socio-economic status and academic success. Sambalpur University.
3. Singh, Basanti. Impact of national movement on Indian education. Kanpur University.
4. Srigirinath, N. S. A critical study of the reforms introduced in educational administration in Karnataka during 1956-76. Karnatak University.
5. Srivastava, Uma. A study of sense of responsibility among secondary teachers. Banaras Hindu University.
6. Uchat, D. A. Study of the self-concept of pre-university students enrolled in the arts, science and commerce faculties of Saurashtra University. Saurashtra University.
7. Varshney, Uma. Civics curriculum and education for citizenship. Banaras Hindu University.
8. Virendra Singh. A comparative study of administration of selected universities in India and abroad. University of Udaipur.

Home Science

1. Gupta, Pushpa. A comprehensive appraisal of home science programme of Higher Secondary schools. Gujarat University.

Commerce

1. Chandrasekhar, Mandikrishnapuram. Management of finance in Indian Railways. Andhra University.
2. Mamoria, Satish Kumar. Personnel management and industrial relations in the textile units of Beawar and Bhilwara, Rajasthan. University of Udaipur.
3. Prabhakara Rao, Jujjuru Vishnu. Marketing of cotton: A case study of Guntur District, Andhra Pradesh. Andhra University.
4. Suryanarayana, Cheekatla. An appraisal of the working and evaluation of the impact of the government agencies on the tribals in the selected villages of Srikakulam District. Andhra University.

HUMANITIES

Philosophy

1. Bagchi, Reeta. The concept of self and liberation in Hinduism and Christianity. Banaras Hindu University.
2. Choube, Deo Brat. A study of mind-body relationship with special reference to Caraka-Samhita. Banaras Hindu University.
3. Goswamy, Chinjoy. Logical structure of casual statements with special reference to G. H. Von Wright. Banaras Hindu University.

4. Satish, T. Role of self in the philosophy of Wittgenstein. University of Madras.

5. Sumtani, L. J. Problem of one and many in Indian and Western ultraphysics: A critical and comparative study. Gujarat University.

Literature

English

1. Avasthi, Aditya Prasad. Vision of evil in the fiction of Herman Melville. Banaras Hindu University.

2. Khambhatta, B. T. The Becket theme: A case study in the literary treatment of historical material. Gujarat University.

3. Majumdar, Bimalendu. Novels of Joyce Cary: A critical survey. University of Calcutta.

4. Mishra, D. S. Sri Aurobindo's Savitri: A study. Gujarat University.

5. Vishnu Chandra. An examination of the last plays of Shakespeare in the light of Sanskrit dramatic theory. University of Udaipur.

Sanskrit

1. Bhargava, Archana. Natak Lakshman Ratnokosh: Ek samikshatmak adhyayan. Banaras Hindu University.

2. Bisht, Harish Ch. Skand Puran Kashi Khand: Ek adhyayan. Kumaun University.

3. Geetha, K. Sukasandesa of Laksamidasa: A critical edition, translation and study. University of Madras.

4. Goswami, Ashok Kumar. A critical exposition of the Sabdakhandas of the Bhasaparincheda. Gauhati University.

5. Goswami, Krishna. Vedantadarsanasya anubandhanerupanam. University of Calcutta.

6. Jha, Vinodanand. Natak ke rup mein Bhavbhuti ka samalochanatmak adhyayan. K. S. Darbhanga Sanskrit University.

7. Joshi, L. V. A critical study of the pratyaksha parichheda of the Nayabhusna of Bhasarvajna. Gujarat University.

8. Kandpal, B. D. Kalidas ke sahitya mein bimb vidhan. Kumaun University.

9. Mishra, Asha. Sankhyasutra evam Sankhyakarika ka tulnatmak evam vivechanatmak adhyayan: Vividh vyakhya-karon ke adhar per. Kanpur University.

10. Ojha, Sarala. A critical study of the dramas of Rajashekhar. Banaras Hindu University.

11. Padmanabhan Unnithiri, N. V. Purnasarasvati—As a poet and commentator. University of Kerala.

12. Ramarathnam, S. Prahasanas in Sanskrit literature: A study. University of Madras.

13. Ram Surat. Social plays in Sanskrit literature: A critical study. Banaras Hindu University.

14. Sharma, Asha. Mahakavi Bhavbhuti krit Mahavir charit tatha Nurari krit Angharraghav natak ka tulnatmak adhyayan. Kanpur University.

15. Sharma, Basanti Lal. Sanskrit ke pramukh mahakavyon mein sadrishya mulak alankar. University of Udaipur.

16. Singh, Rajiv Ranjan. A critical study of the Vaiyakanabhushana of Konda-bhatta. Banaras Hindu University.

17. Thaker, N. H. A critical study of Krasna Kutuhel: A drama by Madhu Sudan Sarsvati with editing of the same. Saurashtra University.

18. Vyas, Rama Shanker. Vaisesikasutra: Chandranandavritti: A study. Banaras Hindu University.

Prakrit

1. Bhaskar, Bhagchandra Jain. Shraman sahitya, darshan evam sanskriti ka aitihas. D.Litt. Nagpur University.

Hindi

1. Carpenter, Jyotsnaben Vithaldas. Maithilsharan Gupta ke kavita ke prerana stot. M. S. University of Baroda.

2. Dubey, Nirmala. Rangmanch ke drishti se Hindi natak ka adhyayan. Kanpur University.

3. Joshi, R. P. Swatantryottar Hindi upanyas mein astitvad. Kumaun University.

4. Kandpal, Deepa. Tulsi ke Manaseta Ram kavya ka bhav evam kala ke drishti se adhyayan. Kumaun University.

5. Kothari, Manju Bala. Adhunik Hindi laghu prabandh kavya: Vivechanatmak adhyayan. University of Udaipur.

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7. Pathak, D. C. Kumaon ke anchalik katha sahitya ka alochanatmak adhyayan. Kumaun University.

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9. Rai, Devendra Kumar. Nirala sahitya mein manavvadi mulya. Banaras Hindu University.

10. Sharma, Mahesh Chander. Shri Bachnesh: Vyaktitv evam krititv. Kanpur University.

11. Singh, Tara. Madhyayugeen Hindi sant kaviyon ke samajik drishti. Banaras Hindu University.

12. Tewari, Dinesh Chander. Hindi ke samajik upanyason mein vyakti tatha samaj vighatan ke samasyayon ka anu-sheelan. Kanpur University.

Urdu

1. Abdul Mannan. Mir Amman of Delhi and his contributions to Urdu prose. University of Calcutta.

2. Abu Nassar, Mohammad. Urdu short stories in West Bengal. University of Calcutta.

3. Daud, Khwaja Ali Syed. Shameem Karhani: Hayat, Shakhshiat aur shairi. Nagpur University.

Persian

1. Kirmani, Hafeezuddin Ahmed. Persian literature during the period of Jahangir. Banaras Hindu University.

2. Rahmatullah, Mohammad Mukhtar. Naziri: Life and works. Nagpur University.

Marathi

1. Khandge, Mandakini. A critical study of the works of modern Marathi poetesses. S.N.D.T. Women's University.

Bengali

1. Mukhopadhyay, Sunilkanti. Bangla sahitye Sri Ram-krishner prabhab. University of Calcutta.

Tamil

1. Jayadevan, V. History and development of Tamil lexicography. University of Madras.

2. Nannan, M. A study of Perasiriya's commentary on Tolkappoyam. University of Madras.

3. Pichamuthu, N. Impact of social renaissance on the novels of Dr. M. Varadarajan. University of Madras.

4. Thirunavukkarasu, K. D. A critical study of Dr. Mu.Va's works. University of Madras.

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1. Padmanabha Sastri, V. B. A. A comprehensive study of early traditional grammars in Telugu. Sri Venkateswara University.

Fine Arts

1. Patnaik, Durga Prasad. Palm-leaf etchings of Orissa. Banaras Hindu University.

Geography

1. Krishnan, N. An approach to service centre planning: Analysis of functional hierarchy and spatial interaction pattern of Urban Service Centres in Salem District. University of Madras.

2. Saxena, Rajender Prakash. Rural settlements and house types in the lower Ganga-Yamuna Doab. Kanpur University.

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1. Habeeb, Atiya. Characteristics and processes of urbanization in colonial India: A case study of Calcutta and its Hinterland, 1850-1921. Jawaharlal Nehru University.

2. Mangalani, Harchand J. History and administration of Jhalawar State, 1838-1947 A.D. University of Udaipur.

3. Mehta, M. J. Ranchhodlal Chhotlal and the textile industry of Ahmedabad: A study in entrepreneurial history. Gujarat University.

4. Mynani, Krishna Kumari. Rule of Chalukya—Cholas in Andhra Desa. Andhra University.

5. Niyogi, Pushpa. Aspects of Buddhism in ancient Bengal. D. Litt. University of Calcutta.

6. Shukla, Sushil Kumar. Prachin Bharat mein daan ke sankalpana aur vyavahar (Hindi). Banaras Hindu University.

7. Swaminathan, Saroja. S. Satyamurti: A political biography. University of Madras.

8. Vyas, Gopal Vallabh. 18vin—19vin shtabadi mein Mewar ke samajik—arthik jivan ke katipye paksh. University of Udaipur.

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- Peter, K.C. "Brainstorming—a potent educational tool". *New Frontiers in Education* 9(3); July, Sept 79: 51.
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- Field, Jack. "Managing universities". *Teaching at a Distance* (15); Summer 79: 68-72.
- Gandhi Doss, L. S. "Student participation in varsity set up". *University News* 17(18): 15 Sept 79: 477.
- Lockwood, G. "Role of the registrar in today's university". *Higher Education* 8(3); May 79: 299-320.
- Pillai, J.K. "Management techniques in education". *New Frontiers in Education* 9(2); Apr—June 79: 68-9.
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- Tausig, Christine. "Excellence in teaching The missing link". *University Affairs* (Ottawa) 20(7); Sept 79: 5,33.

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- Baruah, S. K. and Gupta, R. K. "Higher science education in India". *New Frontiers in Education* 9(3); July—Sept 79: 12-32.

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- Goyal, M.R. "Plugging wastage in medical education". *University News* 17(17); 1 Sept 79: 452-3.

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- Healy, Dimothy S. "Higher education and business: A proven partnership". *Educational Record* 60(3); Summer 79: 272-81.

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- Lampikosky, Karl. "Integrating study guidance in distance education". *Convergence* 11(3-4); 1978: 100-6.
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- Woolfe, Ray and Murgatroyd, Stephen. "Open University and the negotiation of knowledge". *Higher Education Review* 11(2); Spring 79: 9-16.

COMPARATIVE EDUCATION

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COUNTRY STUDIES

- "EDUCATION IN China". *New Frontiers in Education* 9(2); Apr—June 79: 102-9.
- Erap, Alan. "China strives to recover from decade of disaster". *University Affairs* (Ottawa) 20(7); Sept 79: 2-3.
- Price, Geoffrey L. "Expansion of British universities and their struggle to maintain autonomy: 1943-6". *Minerva* 16(3); Autumn 78: 357-81.
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- Srinivasa Rao, R. "Educational progress in Andhra Pradesh: A trend report". *Education Quarterly* 31(2); Apr 79: 21-3.

HIMACHAL PRADESH UNIVERSITY RECRUITMENT BRANCH SIMLA-171005

Advertisement No. 17/79

Applications on a plain paper (preferably typed) under registered cover, alongwith a crossed Indian Postal Order of Rs. 10/- (Rs. 5/- for S.C./S.T.) payable to the Finance Officer, H.P. University, Simla-1 71005 are invited for the following posts so as to reach the undersigned on or before 20th Dec., 1979.

I. Professors in the following Departments:

Economics, Commerce & Business Administration (Two posts, one is against leave vacancy for two years, likely to be made permanent) and Chemistry SPECIALISATION: Organic (Leave vacancy for two years, likely to be made permanent).

II. Readers in the following Departments:

Sanskrit, Law, Political Science, Commerce & Business Administration, English, Music and Linguistic for the Centre of Post-graduate Studies and Hindi, Education, Political Science, Economics, English, History and Commerce for Directorate of Correspondence Courses.

III. Lecturers in the following Departments:

Bio-Science (SPECIALISATION: Animal Cytology or Invertebrate Morphology/Cell Biology), Chemistry (Physical), Psychology, Education (SPECIALISATION: Educational Technology and Teaching of Hindi at the Advanced Level) (Leave Vacancy), Sanskrit SPECIALISATION: Veda or Vyakarana or Darshana) and Economics.

ESSENTIAL QUALIFICATIONS AND PAY SCALES

I. For Professors

- A first or high second class Master's degree of an Indian University or an equivalent qualification of a foreign University in the subject or in allied subject with bright academic record;
- either a research degree of doctoral standard or published research work of high standard in journals of repute;
- about 10 years experience of teaching Post-graduate classes and or research; and
- experience of guiding research at Doctoral level. OR
An outstanding scholar with established reputation who has made significant contribution to knowledge in the discipline concerned.

Pay Scale: 1500-2500.

II. For Readers

- A first or high second class Master's degree of an Indian Univer-

sity or an equivalent qualification of a foreign University in the relevant subject or in allied subject with bright academic record;

- either a research degree of doctoral standard or published research work of high standard in the subject concerned in journals of repute or LL.M (in case of teachers for the department of Law);
- about 5 years experience of teaching Post-graduate classes and or research; and
- Competence to guide research.

Provided that the Executive Council may, if necessary, relax any qualification at (a) above on the recommendations of the Vice-Chancellor or the Selection Committee, as the case may be, if the research work of a candidate as evident either from his thesis or from his published work is considered to be of a very high standard.

(Evidence of being engaged in making innovation in teaching methods and production of standard teaching material, will be an additional qualification).

Pay Scale: 1200-1900.

III. For Lecturers

- A Doctor's degree or published work of an equally high standard; and
- Consistently good academic record with Ist or high second class (B plus) Master's degree in a relevant subject or an equivalent degree of a foreign University.

Provided that the Executive Council may, if necessary, relax any qualifications at (b) above on the recommendations of the Vice-Chancellor or the Selection Committee, as the case may be, if the research work of a candidate as evident either from his thesis or from his published work is considered to be of a very high standard;

Provided further that a candidate possessing a consistent good academic record may be appointed, if a candidate with qualifications at (a) above is not available or is not considered suitable, on the condition that he will have to attain the required qualifications within five years of his appointment, failing which he shall not earn future increments until he fulfils the conditions.

Explanation: Consistent good academic record means overall record of all assessments throughout the academic career leading to the Master's degree which should at least be B plus Second Class.

Pay Scale: 700-1600

Candidates already in service should send their applications through proper channel. An advance copy, however, may be sent direct.

Candidates called for interview will have to come to the place of the inter-

view at their own expenses and bring with them their original research papers, degrees and certificates etc. for verification.

The University also reserves the right to negotiate with suitable person or persons, if necessary, who may not have applied.

The University also reserves the right to fill up or not to fill up the posts or to call only selected candidates for interview. The number of posts likely to be filled may vary.

Candidates are required to give the following particulars:

- Name of the post;
- Name of the applicant (in block letters);
- Date of birth;
- Address for correspondence;
- Province of Domicile;
- Academic qualifications: giving division and percentage of marks in each examination from high school onwards;
- Teaching experience with details of Post held, Name of the Institution, Period with date and last Pay drawn: (Post-graduate and Under-graduate teaching experience is to be shown separately).
- Research work and experience of research guidance, Number of students guided in each programme;
- Papers/Books'/Articles published, if any: (List to be enclosed).
- Minimum Salary acceptable;
- IPO No(s) ————date—————
(MONEY ORDERS OR CHEQUES ARE NOT ACCEPTABLE)
- Any other information worth mentioning, not covered above;
- Signature of the Candidate with date;

NOTE

- Applications not in conformity with the above requirements and applications received after the due date will not be entertained. No correspondence will be entertained in this regard.
- Applications of those who have already applied against the posts of Readers in the Department of Commerce & Business Administration, English, Music and Linguistic for Centre of Post-graduate Studies and Hindi, Education, Pol. Science, Economics, English, History and Commerce for Directorate of Correspondence Courses with reference to this office Advertisement Nos: 1/79 and 15/79 date 3rd January, 1979 and 6th August, 1979 respectively will also be considered. However, they may send additional information, if any.

D.C. Pant
Secretary to the
Vice-Chancellor

University News

FORTNIGHTLY CHRONICLE OF HIGHER EDUCATION & RESEARCH DECEMBER 15, 1979



Smt. Sharda Mukerjee, Governor of Gujarat State, delivering the convocation address at the SNDT Women's University, Bombay. Shri Sadiq Ali, Governor of Maharashtra, Dr. (Smt.) Madhuri Shah, Vice-Chancellor and Smt. K. H. Bhansali, Registrar of the University are also seen in the picture.

UNIVERSITY OF KASHMIR SRINAGAR

Advertisement Notice

Applications on the prescribed application forms to reach the undersigned by **December 31, 1979** are invited for the following posts:

1. Professor in Economics and Law,
2. Readers in Sanskrit, Museology, Bio-Chemistry, Iqbalayat, Mathematics, Persian (Temporary), Urdu (Temporary) and Zoology;
3. Senior Fellow in Kashmiri;
4. Lecturers in Education, French, Geography, History (Temporary), Library Science, Mathematics (Temporary).

The pay scale for these posts are as under:

Professor—Rs. 1500-2500

Reader/Senior Fellow—Rs. 1200-1900.

Lecturer—Rs. 700-1600.

The prescribed application forms can be had from the counter on payment of Rs. 6/- or by sending a crossed Postal Order drawn in favour of the Registrar cashable at Srinagar Post Office along with a self addressed envelope (5" x 11") with the necessary postage.

Candidates are advised in their own interest to send their detailed curriculum vitae in advance.

Candidates who have applied previously for the post of Lecturers in Geography need not apply afresh. They are, however, advised to intimate whether they are still interested to be considered for appointment.

The details in respect of qualifications for the posts can be had from the office of the undersigned.

Peerzada Ghulam Hassan
DEPUTY REGISTRAR (ADMN)

UTKAL UNIVERSITY BHUBANESWAR

Advertisement

No. Estt. II(Comp. 2)/31259/79
Dated 30-11-79

Applications in the prescribed form are invited from the intending candidates for the posts of (i) System Manager and (ii) System Engineer for the Computer Centre of the University.

Five copies of application forms will be supplied to the candidates from the office of the undersigned in person on payment of Rs. 5.35 (including Sales Tax) or by post on receipt of a crossed Indian Postal Order worth Rs. 7.50 paise payable to the Finance Officer, Utkal University, Vani Vihar, Bhubaneswar. No money order will be entertained for the purpose.

Qualification, Scale of Pay and Desirability

System Manager

1st Class Post-Graduate Qualification in Computer Science of Physics with experience in computer programming and research in computers is essential. 5 years practical exposure in the field of computer study/management is desirable.

Scale—Rs. 1100-50-1600.

System Engineer Essential

A master's degree in Science or a Bachelor's Engineering degree followed by at least 5 years experience as a System Analyst.

Desirable

Post-graduate Diploma or Degree in Computer Science.

Scale—Rs. 1100-50-1600.

(The scale of pay is subject to the approval of the Chancellor) The other details of the posts may be had along with the application form.

The last date for receipt of application is **24.12.1979**.

S.K. Panda
REGISTRAR

MARATHWADA UNIVERSITY AURANGABAD

Advertisement No. Estt./Dept./69

Applications are invited for the following teaching posts on or before **January 10, 1980**.

1. Two Readers in Zoology

One each in specialisations of Crustacean Endocrinology and Molluscan Endocrinology.

2. Three Lecturers in Zoology

One each in specialisations of comparative Physiology, Annelid Endocrinology and Neurobiology / Radiation Biology.

For detailed advertisement and prescribed forms of application, please send Rs. 3/- with a self addressed envelope (23 x 10 cms.) bearing Postal Stamps worth Rs. 2/-, to the Registrar, Marathwada University, Aurangabad.

M. G. Kulkarni
REGISTRAR

BIDHAN CHANDRA KRISHI VISWA VIDYALAYA

P.O. MOHANPUR, DIST. NADIA
WEST BENGAL

Advertisement No. Apptt/9/79

Applications are invited in prescribed form for the following posts in the Department of Dairy Technology, Faculty of Veterinary and Animal Sciences in the scale as mentioned below with benefits of D.A. and other allowances admissible under the rules:

A. Professor—Four posts

One post each for the (i) Dairy Chemist (ii) Dairy Bacteriology, (iii) Dairy Engineering and (iv) Dairy Technology in the scale of Rs. 1500-60-1800-100-2000-125/2-2500.

Qualification Essential

(i) A First or High Second Class Master's degree in the relevant subject, (ii) Ten years' experience in teaching and/or research as evidenced from published paper in Institution or University standard at the post-graduate level of which five years must be in a post equivalent to Reader, (iii) Specialised knowledge in one or more specialised fields with experience of guiding research. Preference shall be given to candidates having Doctorate Degree with professional/scientific work of outstanding merit.

Age: Preferably below 55 years.

B. Reader—Four posts

One post each for (i) Dairy Chemistry, (ii) Dairy Bacteriology, (iii) Dairy Engineering and (iv) Dairy Technology in the scale of Rs. 1200-50-1300-60-1900.

Qualification Essential

(i) A First or High Second Class Master's Degree in the relevant subject, (ii) Five years' experience in teaching and/or research as evident from published papers in Institution or University standard of which three years must be in a post in the rank of Lecturer.

Preference shall be given to candidates having Doctorate Degree or published work of equal standard.

Age: Preferably below 50 years.

C. Lecturer—Three posts

One post each for (i) Dairy Chemistry, (ii) Dairy Bacteriology and (iii) Dairy Engineering in the scale of Rs. 700-40-1100-50-1600.

Qualification Essential

(i) A consistently good academic record with first or high second class Master's degree in the relevant subject or equivalent degree of foreign University, (ii) Two years' teaching/research experience in any institution of repute.

Preference shall be given to candidates having Doctorate Degree or published work of equal standard.

Age: Preferably below 45 years.

N.B. For all posts in Dairy Engineering, a basic professional degree B.Sc. (D.T.) is essential at the graduate level.

Experience and age limit may be relaxable on the recommendation of the Selection Committee in the case of candidate otherwise qualified. A higher initial pay in the scale may be granted on the basis of qualifications, experience and present emoluments.

Applications must be submitted in the prescribed form which may be obtained from the Office of the Registrar, Bidhan Chandra Krishi Viswa Vidyalaya, P.O. Mohanpur, Dt. Nadia, West Bengal personally or by sending a self-addressed envelope (25cm x 12cm) stamped 0.40 paise (forty paise) on payment of Rupees Eight (Rs. 8.00) only by crossed Indian Postal Order in favour of Bidhan Chandra Krishi Viswa Vidyalaya. Forms will be available from the office of the undersigned between 11 a.m. and 3 p.m. on week days and between 11 a.m. and 1 p.m. on Saturdays.

Persons already in employment should apply through proper channel.

Candidates abroad may also apply on plain paper with necessary Postal Order. Applications completed in all respects should be submitted in the envelope superscribed with the name of the Post applied for and must reach the office of the Registrar by **28th December, 1979**.

Candidates called for interview will have to appear for the same at their own cost.

A. K. Mitra
REGISTRAR (ACTG.)

UNIVERSITY NEWS

Vol. XVII DECEMBER 15
No. 24 1979

A Fortnightly Chronicle Price
of Higher Education 80 Paise

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Opinions expressed in the articles and reviews are individual and do not necessarily reflect the policies of the Association

Editor : ANJNI KUMAR

Science—its frontiers and limitations

Eversince the renaissance period, the epoch making discoveries of Copernicus, Calileo and Newton led to the pehnomenal progress in science. Science has made extraordinary advances during the last few decades and particularly after the last war. To-day everyone knows something about the part played by science both during wartime and peace-time. The importance of science to the growth and development of a nation in peace-time has been well realised. Science has played a great part in industry, in medicine, in agriculture, in health and nutrition and in many diverse activities which are beneficial to mankind. With the rapid development of science, civilizations have become increasingly dependent on its use to have a greater control and mastery over nature and to exploit the natural resources to provide all the worldly comforts and to support large populations at a standard for above the normal.

The discovery of pencillin by Fleming, the discovery of anti-rables and many such discoveries helped to combat diseases for which there was no cure earlier. Malaria has been practically eradicated except in our country. Cholera, yellow fever and many such diseases were kept under control. On the surgical side phenomenal progress was made. Almost every part of the human body can now be replaced except of course the brain. We have seen heart transplants, artificial limbs, plastic surgery, replacement of lungs, kidneys, intestines, eyes, eardrums. All these are achievements of the highest order.

The recent breakthrough in space starting from the satellites to the landing of man on Moon and Viking mission to Mars has given us a new three-dimensional freedom to explore the infinite realms of space and the origin of the universe.

There are two conceivable cosmological theories. First is the Hoyle theory of continuous creation or steady state theory. The other is the big-bang theory which is based on a priomordeal explosion when universe was created. Cosmologists have not yet been able to establish which of these theories is more plausible inspite of the newly available tools of Radioastronomy which enabled scientists to see far beyond into the remote past. One thing is certain that both the theories demand creation of matter, even if we wish to avoid the question of the Creator.

The next few decades will no doubt herald many more discoveries. The unravelling of the genetic code ultimately leading to genetic control of life, the exploitation of new sources of energy including solar energy and hydrogen fusion energy, the new and

Excerpts from the Diamond Jubilee Lecture delivered at Dyalbagh, Agra, by Prof. B. Ramachandra Rao, Vice-Chairman, University Grants Commission.

cheaper methods for desalination of salt water, major breakthrough in deadly diseases like cancer, the detection of extra terrestrial sources of life are some of the developments which the coming generation will witness.

There is a general misconception that scientists and the non-scientists are diametrically opposite in their methods of approach, analysis, techniques and so on. Scientists are supposed to be completely guided by purely rational and logical considerations of quantitative and experimental approach. While this may be generally true, there are several examples of scientific discoveries which were the outcome of search for beauty, order, harmony and symmetry in nature. Some of the discoveries are also purely accidental. Johannes Kepler has formulated his laws of motion of planets in spite of the fact that he firmly believed that the circle is the most perfect example of orderly motion which must be followed by heavenly bodies. Creative imagination is the tool of scientists as well as the non-scientist. The resemblances between science and humanities are far more than their differences and as such they deserve more emphasis. Together they have as their aim the appreciation of the beauty of nature, the discovery of order in apparently unrelated facts, events or information, the reduction of complexity into simplicity and above all the understanding of the universal truths which govern the life on earth and matter in the universe.

The current image of science in the mind of the educated non-scientist is false and misleading. This arises from an inadequate knowledge of science taught to the students in arts, humanities and social sciences. This happens because, as in the case of teaching of English, science is taught to non-scientist by a specialist whose approach is generally highly technical if not mathematical. The non-scientist is generally baffled by the complex developments in science, which have shattered the simpler concepts and interpretations in science developed earlier. Science should therefore be taught as a part of general education. Our curriculum at the school and college level must be so designed that our students are broadly educated rather than specialised, their interests widened rather than narrowed and their creative and imaginative ability developed to their fullest extent than discouraged. It is important to teach the basic principles of scientific method and inculcate an appreciation of how scientific and technological discoveries have made possible social changes and economic advances. It is also essential to the scientific and technological basis of everyday life concerning, for example, the avoidance of disease, the principles of good diet, human biology, the general background of modern technology and so on. Emphasis should be laid on gradual learning of scientific methods by experimentation, by deducting scientific generalisations from simple everyday facts and observations rather than starting giving chemical formula or physical theories. With this kind of a new approach, it is possible to bridge the ever-widening gulf between the two cultures, one based on science and the other on humanities and bring

about a more unified picture of knowledge about man and the universe,

Let us examine the law of causality which leads to the determinist theory. This approach which dominated the thinking and philosophy for three centuries leads to the conclusion that given the parameters in sufficient detail, every event in future follows from it. Laplace said, "Give me the position and velocity of all particles in the world, I shall predict the future of the world". Nothing can be farther from truth than this purely materialistic approach. Although the laws of classical physics, which are applicable to larger bodies, lead us to this conclusion, in the world of atoms this principle is violated. Heisenberg's uncertainty principle states that in the sub-atomic world determinism is no longer valid and all definite parameters are to be replaced by probabilities. Moreover, the observer and object under observation can no longer be treated as separate.

It could be said that even the greatest of scientists cannot assert that his discovery is final and infallible. It has at best a high degree of probability and will in all probability be modified if not completely replaced by later theories or discoveries.

At one end of the scale of physical dimensions he is unable to penetrate and understand the sub-microscopic world whether it is in the interior of nuclear particles which are inanimate matter or in the interior of a cell, which is animate matter. At the other end, he is faced with the challenge of an almost infinite world far beyond the grasp of his tool in the most distant regions which take ten billion years to reach even if man can travel with the speed of light. Perhaps the physical laws, casual relationships and the material and quantitative approach would not be adequate to deal with the world around us in these extreme cases which man is unable to penetrate with his scientific approach and using his existing tools for study.

Even in exact sciences like physics we assume the universal validity of physical laws in drawing conclusions about the infinite expanse of universe. All our conclusions about the structure and microscopic behaviour of our universe is based on extending physical laws like Bode's law to be valid in indefinite space, an assumption no one can verify or refute in the near future. Of course any such study excludes the metaphysical character of the universe.

Thus it is evident that the principle of causality led to an estrangement of the scientific world from human life, which is dominated by qualitative aspects such as love, truth, morality, beauty...which cannot be quantified. The limitations of physical laws will be seen prominently in biology. We cannot understand even some of the elementary processes in life on this basis. The size, the shape of living bodies, its resistance to decay, its evolution and certainly its consciousness cannot be understood on basis of physical laws. In biology we have to apply quite different principles.

Biology will certainly make good progress based

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The Examination that Failed

Navin Chandra Joshi*

An important aspect of the present educational system that has unequivocally been denounced by educators as well as by students (as also by the society) is the system of examinations in our universities. This is for the reason that the chief purpose of the present examinations has unfortunately not been organically related to the actual process of education.

The present examination system is an important factor in spreading amongst the students unhappiness, displeasure and indiscipline. The whole rigid system of education, of which the system of examination is a vital component, has not yet drawn the ire of the student body in India although it has done so in other countries. Perhaps, it is only a matter of time before student dissatisfaction shows up explicitly with the entire profile of our educational system.

The essay type

The kind of examination that prevails in almost all Indian universities suffers from serious defects like the lack of clearly defined objectives with which they are held, arbitrary sampling, subjective scoring, all resulting in a low level of reliability. Question papers of the essay type generally do not contain problem-solving exercises and as such, students do not acquire practical orientation nor do they develop critical skills and faculties. At the same time, the standardisation and grading of the product of our universities do not inspire confidence regarding the worth of the degree obtained through these examinations. Memory and chance dominate the whole examination scene.

The University Education Commission had come to the conclusion that the present examinations bear very little relation to the wider purpose of the educational process. The Dongerkery Committee appointed by the University Grants Commission in 1957 in its report on examination reforms commented: "We are convinced that if we are to suggest one single reform in University Education, it should be that of the examinations." The Committee said that any worthwhile reform in the examination system involves not merely an improvement in its techniques but also better conditions in which the teaching-learning process is carried on in the universities and colleges in India.

Dr. Benjamin S. Bloom, an education expert, has expressed great surprise at the high rate of failures in Indian universities every year. In his report entitled "Evaluation in Higher Education" submitted in 1961, he remarked: "It is hard to understand how

an education system can function effectively if its failure rate is so high."

It may be noted that reform in any examination system has two aspects viz., educational and technical. The former relates to selection of students for various courses, internal assessment, quality of teaching, student response, etc., while the latter involves paper-setting, appointment of examiners, marking of answer scripts, scaling and moderating of marks and so on.

At present, except in a very few courses, we find that no credit is given for class work in the evaluation machinery. As such, neither the teacher nor the student is serious about written work. The student writes only once and that is at the annual examination. In the overcrowded classrooms, it is the lung power of the teacher and the patience of the student to bear with him the ordeal, that are really put to test day in and day out in our universities and colleges.

I am inclined to believe that the major defect of our examination system emanates from the way knowledge is imparted to students. Consequently, the tendency amongst students is to adopt the line of least resistance and probably so also with teachers whose anxiety is to teach 'safe'. Who inspires whom for this attitude is difficult to say.

The usual way of setting a question paper is a guarantee enough to predict at least 50 per cent of the questions which might be asked in any given year. The most unfair questions in an examination are those that came also in the previous year. In fact, previous year's question paper guides the students for what they must not study. The student who studies more than two-thirds of a subject is likely to be studying more than he needs for a particular examination. As for the paper-setter, his skill is often measured by his adroitness in defeating the 'guess' of the students and their teachers.

Negative standards

Evidently, there is a total divorce between teaching and examination. A wrong belief that fewer the first divisioners produced by a university in a particular subject, the higher is its standard of education. As such, the criterion of improving standards has become a negative one. Just as proliferation of our population year by year is considered undesirable, mass output of first class students is despised in the same way. This farcical notion must be uprooted immediately before the country becomes a big storehouse of good-for-nothing stuff. To my mind, fewer the number of first class students turned out by a university, the poorer the standard of its teaching that gets reflected. There is no reason why, with proper education, all students of a particular class should not be considered fit enough to get a first division. It is really the failure of the teachers and the university if the mass of students they educate are third class, let alone when they fail.

Granted that subjectivity in evaluation just cannot be done away with, the most effective way in which

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subjective judgement could be diluted, if not altogether weaned out, is by introducing a system of viva voce for each student by a board of teachers. Each teacher may award his individual marks and then a mean arithmetic average of all be computed. The viva voce should be of a weightage equal to the internal assessments does no good either to students or to teachers. Experience shows that cheating is not uncommon and cramming is at premium. Students' answers contain just the same matter that has been delivered to them through lectures—absolutely nothing beyond the notes taken down by them in the class. The answers, as such, do not reflect any further study of reference books.

In my view, this sorry state of students' performance has abundant scope for improvement by asking such types of short questions that cannot be answered through cramming of copying from notes but can be attempted only if one has thorough understanding of the subject. The semester system is better in the sense that it reduces the evil effects of a single terminal examination by having two examinations and taking into account sessional work which, on the whole, leads to an even pace of study. More frequent changes in syllabi can be made, if necessary, on academic consideration.

Overall assessment

The formal lecture system needs to be replaced by the system of informed and intelligent discussions and previous preparation by students and teachers. Performance in such discussions and previous preparations should become the means for evaluating students' knowledge. This evaluation should be given some weightage in the overall assessment. This method will reveal to the student his own progress in studies as it tells the teacher his own progress in studies as well as his own ignorance. Surely, we cannot dispense with the examination system of this sort or the other. But certainly, the present way of deciding the fate of students is utterly defective to the point of being cruel. Examination, in its proper setting, is something that contributes to the total purpose of education. It is, therefore, not an end in itself and should not be allowed to dominate the whole educational process as at present.

The system of annual examination should be such that it makes students and teachers serious enough right from the beginning of the academic session. Experimentation with the idea of "Question Banks" could be done for the many good points in it has in its favour. In order to instil confidence in the minds of students regarding the award of marks to them, they be given the right to appeal and an appellate board of the university may be set up for the purpose. The present examination system can be radically reformed without additional expenditure. Even if it involves some extra cost, is it not worth incurring?

Validity and reliability

As an examination is essentially evaluation or measurement, the instrument for doing so must be as perfect as can be. In other words, the instrument of evaluation should adequately satisfy the conditions of

validity and reliability. It will be valid when it measures what it is intended to measure. It will be reliable when it measures accurately what it measures. The first prerequisite for both these tests would be the identification of the object to be measured. If it is some qualitative object then examination involves the quantification of qualitative data and this task is not only difficult but also not fool-proof. As compared with the external examination, the system of internal assessment makes up for many of the shortcomings of the total educational process. It helps, to some extent, in creating validity. In the external examination, memory is at premium rather than the performance of a student. Internal assessment provides better scope for the evaluation of performance though it may suffer from lack of objectivity. All said and done, no system of education and examination can ensure a hundred per cent validity and reliability. In fact, the degree of success in applying the principle of learning need not be judged by teachers themselves the way they do at present. This function can be left to be performed by the community at large after the student completes his formal education. We teachers must not pretend to judge what the logic of the situation makes us basically incompetent to do. Instead, what is required is that the test system be so devised that it cares for stragglers rather than leave them at the point where they got stuck.

Educational therapy needed

No developing country can afford to incur the enormous cost of the waste products of its educational system. It would, therefore, be better to detect students who cannot benefit by the learning process and divert them at the earliest stage to places where they might fit in more usefully. Still, however, there would always remain some students who betray lack of interest and apathy for improving through creative teaching. For them, the use of educational therapy would be the right course rather than branding them with an 'F'. The fact remains that a competent person makes his way through life irrespective of his grades or divisions.

Creative teaching

The routine examination should give place to creative tests that judge the ability of students in applying the strategies of learning. These tests will help the teacher also to adjust his own strategies of teaching. The library and the laboratory should become more useful than text-books. Discussion seminars, with nuances of their own, should become regular features in place of the present day lectures. They will help students more than do these lectures. Seminars will encourage students' expressive abilities. The present system of teaching chokes our students with a sense of inferiority when they do not assimilate what has been taught to them through lecturing. In creative teaching, the success of a teacher will be judged by the degree to which he is able to impart to students the strategies and the abilities which made the teachers own pursuit of knowledge and asset to him.

It is necessary that teaching should aim at impar-

ting strategies of learning. There should, therefore, be a change in the teaching method so that it becomes method-oriented in which the emphasis is not so much on the subject as on how to learn it. In other words, instructions must cease to be mere teaching-oriented. Learning the subject itself is not that important as is learning how to learn. This will require a lesser emphasis on the fixed syllabus, some fixed set of textbooks and the routine system of examinations. Students' own initiative to learn must come during the course of his education. The student has to be taught to explore the field of study on his own after he is given the necessary directions and guidance. Thereafter, a day-to-day discussions

will help in clearing various issues with which he is not in a position to come to grips.

Apparently, the present method of examination in the country at higher levels of education leaves much to be desired. The havoc that the philosophy of liberalism in award of marks is likely to do in future is tremendous. Grades and divisions, which already stand devalued, will cease to be equated with the degree of accomplishment in the learning process. When marks serve as an end rather than as a means for better achievement, all their significance is set at naught. They then serve only to damage the image of the university whose products they are known to be. □

Science—its frontiers and limitations

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on physico-chemical approach. We may synthesise the gene and some day produce test tube babies but these will be a poor caricature of real living things.

In the western world, the shift in human thought towards a materialistic view of the world contributed to a shift away from religion and humanism. The ill-effects of such a shift are obvious even for a casual observer. The destructive weapons which science and technology has placed at the disposal of the politicians led to large scale destruction in the last world war. Perhaps at no time in history did we observe such brutality in man as during the last world war.

As it stands, today there is a clear dichotomy between science and our life as human beings barring those technical applications. Science per se is neither moral nor immoral as its main objective is search of truth. But the moment science claims to be the beginning and end of all knowledge and to be the whole and the only truth, then it will fall from its high pedestal in the modern world. The moment it assumes this approach, then it will endanger all values and reverence for life. Fortunately we still have a large stock of humanism which stands between us and this danger, particularly in countries of the orient with spiritual traditions dating back to the hoary past. It is necessary to protect this precious heritage from the onslaughts of technological modernisation with all its irresponsible applications to destructive weapons in the name of protecting and preserving mankind.

Physical science is also becoming more and more abstract that in due course we may have a situation where science and philosophy may merge. Science, Philosophy and Religion all start from the same point namely—an unconquerable belief in the intelligibility and rationality of the universe. This is perhaps the real driving force. Scientists have made several discoveries, the gravity, electromagnetic rays, weak interactions and the powerful nuclear forces. Thus there are four different types of forces in the physical world and scientists tried their level best to find the unity in this diversity but failed. But in another direction looking at the material world, we find two things apparent namely matter and energy, one is supposed to be independent of the other. Einstein's great discovery led to the unification of both these into one single concept of matter and energy as two

different manifestation of one and the same entity. When you go into macrocosmic world, you find one can easily be changed into another.

It is said that our present crisis is due to failure of human awareness. We should therefore study consciousness itself scientifically, the nature of consciousness and its evolutionary possibilities. Consciousness is a phenomenon which excludes purely materialistic approach of the material world. Whatever we call as the consciousness cannot be described in terms of molecules—unless of course these have an inner “withinness” which has an inner of life apart from the material or mechanical aspect. Like the evolution of the human species from the unicellular organism, the consciousness has evolved. We have no valid reason to believe that human consciousness has already evolved to be at the apex of the pyramid of evolution. On the other hand there is evidence to show that man is at the intermediate stage with a distinct possibility of a leap in evolutionary consciousness. One thing which is real is the dimension of time which is well understood. Whether it is entropy of the physical world, the evolution in biology or in human psychology or in human consciousness time always flows in one direction and none can reverse this process.

One cannot understand how through several millions of years the physical and biological world has evolved following mechanistic and natural selection processes leading ultimately to the evolution of man to a position of intellectual development and supremacy to appreciate, control and exploit nature for the good of mankind. If the finest qualities of human nature such as consciousness, morality, love, self sacrifice and justice are to be treated to be at the end of the chain of evolutionary phenomena, they must also be treated to be at the centre of reality. If our hope of a new order and a new age of consciousness is not belied, then there is every possibility that man will finally exceed himself in the realm of consciousness rather than undergoing further physiological evolution.

Pandit Jawaharlal Nehru once remarked “Nothing is so remarkable as the progressive conquest or understanding of the physical world by the mind of man today. Man is no longer a victim of external forces or circumstances, while there have been these conquests, at the same time, there is the strange spectacle of lack of moral fibre for self-control in man. Conquering the physical world, he failed to conquer himself.” □

Social Foundations of Adult Learning

Rajani R. Shirur*

Social foundations of adult education explores and interprets the basic relationships between or through which the individual adults gain or organize their experiences and develop moral and cognitive skills. In other words, it describes and explains the systems of organizations, institutions, groups and social processes in society.

Scope : The primary concern of social foundations in adult learning should be to understand manipulation of educational processes for achieving better personality development—in terms of improving both their moral and cognitive skills. The sociological perspectives of adult education cannotes that education is a continuing social process of learning through various means—not simply through the formal institutional structures.

Social milieu educates the adults : This implies that there is not only the need to improve the social milieu but manipulate it to facilitate better learning. How do we achieve this ? An answer to this should be sought through an understanding of the social processes.

What is the objective of adult education ? Purpose of adult education is social cohesion, unity, better social order and social control; better understanding and manipulation of the environment to the best advantage of his own self and that of society. The scope of social foundations of adult learning should then include studying the impact of interactions and complex social relationships on the whole process of education and development of adults.

Education is for socialization : What is socialization ? It is the process of reciprocal interaction between the individual and the social situation, enabling the individual to internalize the values and skills of the society in his personality system. This process of socialization, an indispensable element for human development, continues to operate throughout the life cycles of every individual. Socialization that occurs in childhood through the processes of imitation, adoption, acceptance and control is inadequate for the many different positions (status) and roles that individuals are assigned in later years.

Adult socialization : People move through a sequence of positions that correspond to successive stages in the life cycles from infancy to old age. Certain norms may remain constant but many others demand modification of the social self to accommodate changes that occur in a person's life cycle. From primary socialization, a basic linkage of society and self, one moves to adult socialization in which he experiences critical consciousness and critical judgements from self-consciousness and social consciousness.

Problems of adult socializations are myriads and are enhanced by the complex division of labour, and by rapid changes that occur in the social structures. This means that many programmes have to be provided for socialization of adults. In this context, it is vitally important to organize adult and non-formal education and continuing education programmes for adults.

When a person gets access to knowledge, becomes capable of seeking knowledge and acquires skills himself, he no longer remains dependent entirely upon his situations or environment and as such his image of himself, his self-esteem, and his self-feeling become well-grounded. While socialization help people find an appropriate niche in the social structure, it becomes even more important in adulthood when they gain greater freedom in choosing the groups and organizations to which they aspire to belong.

In addition, the alternative positions and roles that are open to adults and the social mobility that characterize our society make it much more difficult for a person to anticipate changes that occur in his life styles, educational attainment and occupational choice and so on. Socialization is not merely a matter of individual adaptation to social environment. The environment itself is continuously changing, and the processes of socialization should provide guidelines for the adaptations needed in the social structure in response to changes that occur in the environment.

Sequence in socialization : To fulfill the requirements of a given social position, three things are vitally necessary for any adult.

1. Knowledge (of the relevant normative prescriptions).
2. Ability (to do the assigned tasks)
3. Motivation (to perform according to prescriptions)

Thus the ultimate goal of socialization is to provide all adults the knowledge, ability and motivation needed for effective participation in the affairs of the society.

Socialization process utilizes all of society's resources and all of the individual's skills and capabilities and motivation needed to carry out essential tasks.

Analysis of society and the adult: The society and the individual adult, when analysed consist of the following elements :

Society consists of (i) the Normative System; (ii) the Opportunity System and (iii) the Sanction System.

The individual consists of (i) learning ability, (ii) Sensory-motor skills and (iii) conative skills. Early socialization primarily focusses on and emphasises

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Social Surveys as tools for Science Policy Studies

Nirmal Haritash*

1. Surveys in Social Sciences

Surveys, as techniques of research, have found their application in social sciences such as sociology, economics, political science and public health. They are being used by specialists, in almost all fields of behavioural sciences, being adopted in each case to the requirements of that field. Very often, surveys are undertaken to fill the gap in the information and to generate new information. However, the survey methods are inter-disciplinary in their approach. They are also providing the raw materials for an increasing volume of cross-disciplinary analysis.

Surveys, vary greatly in their scope, design and content. In any research, the specific characteristics of a survey design is determined by the basic objectives of the research. Most surveys go through the same stages or cycles of stages which a research problem undergoes. Thus in order to get accurate results in a research problem, the first requirement is to plan on efficient overall survey design. The design attempts to answer questions such as : what variables should be measured ? What kind of samples be drawn? Are control groups needed ? Who will be questioned and how often ? What scales may have to be built or adopted? What should be the sample size and so on ?

It thus reveals that surveys are the research instruments of great versatility, being applied to a wide range of problems in the general area of social and policy research. The applicability of survey methods in various disciplines of science—natural sciences and technology — have been recognised only in the Sixty's.

In this paper, the special features and the roles of survey design are discussed, with particular reference to their use in Science and Technology Policy Studies. In this context, an attempt has been made to analyse the way in which various survey methods help in finding out the Science Technology Potential (STP) of a nation and how the survey techniques are involved at various steps of Science policy formulation. It has thus been expounded that survey techniques are the important tools in quantifying the various parameters for science and technology planning and policy formulation.

2. Science and Technology Potential

One of the important new concepts which the UNESCO is now using is that of a country's scientific and technical potential or (STP). The national scientific and technological potential (STP), compri-

ses the whole of the organised resources a country has at its disposal for the purpose of discovery, invention and technological innovation and for the study of national and international problems that science and its application involve. Planning of scientific research at the national level, therefore, implies planning of increase and effective utilisation of the S.T.P.

According to Kovda, the scientific and technological potential of a country depends on the following six factors:

- (i) The number of scientists and engineers.
- (ii) The number and equipment of national research institutes. The more numerous and the better equipped a country's scientific institutes are, the greater is that country's STP.
- (iii) National production of scientific apparatus, measuring instruments and special equipment. This index illustrates a country's capacity constantly to review and improve the scientific equipment and apparatus as this becomes obsolete every ten to fifteen years.
- (iv) Network of scientific documentation, scientific libraries, microfilm libraries, map collections, translation of scientific literature and bibliographic service are a revealing index of a country's S.T.P. The more efficient is the documentation service, the less is the time lost in search and in the retrieving of information.
- (v) The range and number of national scientific publications.
- (vi) *Scientific vocabulary.*

To this may be added the diversification of research programmes. Greater the diversification on research programmes, the larger would be the field covered and more the opportunities to dovetail problems requiring solution. The data regarding various aspects of STP are usually not available or their collection is not institutionalized in many countries. It is obtained through special surveys etc. Various survey designs help in determining the varying contours of the STP of a nation.

The survey of the science and technology potential (STP) consists of collecting, updating and analysing the significant data of the resources, a country has at its disposal, for scientific and technological

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activities. These data may be administrative, functional, operational, structural or statistical in nature.

The Scientific and technological potential is composed of numerous sub-systems. For the satisfactory administration of all the sub-systems and their development, there is a dire need for acquiring a comprehensive view of the whole system through STP survey at all levels of these systems.

The information in this regard consists in :

1. Determining the total human resources in science and technology available to the country. STP survey includes only those human resources which are engaged in research and experimental development and related scientific and technological activities.
2. The financial resources devoted by the country to R&D and related scientific and technological activities.
3. The physical resources devoted to scientific production.
4. The scientific and technological information centres and services available in the country.
5. The research programmes in progress.
6. The "decision centres" relevant to the country's scientific and technological activities, their capabilities and potential.

Various aspects which are included in the STP surveys could consist the following:

(a) Human resources

- (i) Number of scientists, engineers and technicians among the active population of the country;
- (ii) Number of scientists, engineers and technicians engaged in scientific and technological activities.

(b) Financial resources

- (i) Total expenditure of the various scientific and technical units, departments or institution;
- (ii) Machinery for collecting and allocating financial resources intended for the scientific activities;
- (iii) Identification of financial flows relating to the scientific activities.

(c) Physical facilities for Scientific and Technical Work

- (i) Identification of scientific units, services and institutions distributed according to the sector of national activity;
- (ii) Institutional infrastructure;
- (iii) Large scientific installations in the country;
- (iv) Age and system of depreciation of the physical facilities for scientific and technical work.

(d) Scientific and technical information

- (i) Catalogue of scientific and technical periodicals available in the country;

- (ii) machinery for the direct transmission of information to the scientific workers;
- (iii) programmes of research in progress and planned in the country.

(e) Decision Centres

- (i) Identification of functions and powers of decision centres relating to the scientific and technological activities of the country?
- (ii) machinery for action, for monitoring, for information and for corrective retroaction (feedback) employed by the decision centres.

3. Social Surveys and Data for STP

Various procedures for the collection of data depends on whether the required data are immediately available or whether they have to be collected at first hand. The data so collected can be further categorised as under.

1. "*Intrinsic*" data: It is related to the scientific and technological activities in the strict sense, i.e. dealing with scientific and technological activities, their collection, processing and analysis of these data.
2. "*Allied, related and peripheral data*" i.e. those relating to the political, socio-economic and cultural development of the country.
3. "*International data*" relating to the science policy of other countries, the activities of international scientific organisations and general worldwide aspects of science.

However, the value and usefulness of the data depends primarily on the following characteristics of the STP surveys :

- I. Exhaustiveness.
- II. Accuracy and Precision.
- III. Continuity.

I. Exhaustiveness of the STP Survey : The survey should cover the whole of scientific and technological activities of the country i.e.

- (i) It should not be limited to R&D activities alone, but should also cover the related scientific and technological activities, because such activities play an important part in the scientific and technological development of a nation. Their omission from the survey would correspond to a too restricted view of the STP and would constitute an obstacle in the systematic development of science policy.
- (ii) It should cover all branches of economic, social and cultural activities.
- (iii) It should cover the whole field of science and technology including the social and human implications.

II. Accuracy and Precision of the STP survey :

A survey conducted for science policy studies purposes should be accurate, precise and detailed as far as possible. The data which are not immediately available are to be obtained through primary sources reaching down to the level of the Scientific Unit. An

accurate and precise STP data cannot be achieved at the first instance, but it is to be repeated for several times. In the successive surveys the systematic errors are eliminated.

III. Continuity of the STP survey

Periodic updating of the STP survey data is necessary because the changes occurring in the country's machinery for scientific production constitute an important indicator of the national scientific development which in the longer term is responsible for economic and social development. Moreover, the degree of appropriateness of science policy to the country's actual needs and possibilities depend upon the situation which STP survey reflects. The STP survey data which are collected by means of questionnaires are to be repeated at various intervals. The data which are immediately available are kept up-to-date regularly by survey departments, by making use of the publications and documents of the national and international organisations, whose activities play an important role in the national planning of science. The need for continuous up-dating of the information also arises from the fact that nature and quality of information changes, as the rate of obsolescence in science is very high. However, with the expanding coverage of regular statistical service of the nation, some of the items of information would be covered by them. To that extent repeat surveys need not be performed.

4. Usefulness of STP surveys for comparative studies.

Survey technique is basically applicable to national S.T.P. only. The proper functioning of an STP survey is closely linked with the establishment of channels for the rapid and continuous transmission of information by maintaining contact with agencies collecting data on regular basis, both nationally and internationally.

These could be:

1. The country's central bodies responsible for collecting and analysing the allied and related data for science planning;
2. The principal training and research groups responsible for studying science policy matters (within the country and abroad);
3. The international organisations or the national science policy making bodies of other countries, for example UNESCO and OECD produce wealth of data, in this regard. NRC of Canada, or Science Policy Council of U.K. or NCST in India also produce considerable data in this connection such as:
 - (i) The overall policy of the Government.
 - (ii) The volume of reliable data on the STP already available.
 - (iii) The stage of solution of the socio-economic statistics.
 - (iv) The scientific knowledge relating to the environment and the country's natural resources.

The data of the STP survey provide the basis for a series of systems of analysis, comparative studies of the country's situation and forecasting analysis.

In the early sixties it was found that there was complete absence of any information on this aspect. It was to fill this gap that efforts were made by OECD, UNESCO and individual advanced nations to generate this information. Thus there was both collective and individual efforts to survey this aspect.

In India various pioneering surveys were initiated in order to find out the resources available at the disposal of the country to look into the state of scientific research in various laboratories and also with various other objective.

It is needless to emphasize that the information generated through these surveys forms the basis of numerous studies. It is these studies that lead to the crystallisation of concepts, their operationalisation and finally in the formulation of science policy.

5. Surveys and their relevance to science policy

After the World War-II, immense importance is being attached to science and technology, because the role of science and technology in the economic and social development of a country is universally recognised. Consequently, the governments of both the developed and developing countries are devoting more and more resources to the development of science & technology and its application to achieve specific social and political goals. As a result, new national science and technology policy making bodies are being established as a part of the governmental machinery in various countries. Specialised groups, committees are also emerging which deal with the specific problems of science and technology policy.

The concept, science policy, as that of any other policy is not static, it is continually evolving because of the rapid change taking place partly in the situations themselves and partly in perception of these situations. While taking any of the workable definition of science policy, it is concerned with the formulation of policies regarding the development of science and technology on the one hand and planning and organising the application of scientific and technological activities for societal good on the other hand.

A comprehensive science policy thus aims at co-ordinating and controlling the allocation of resources and introducing new activities in order to fulfil specific aims. In brief it can be said that it attempts to integrate social and cultural ethos with emerging concepts and values of society. It is thus deliberately chosen path by a society in calculating scientific temper, rational thinking about use and development of science and technology. A science policy includes in it, the "policy for science" as well as "Policy of Science".

The main objectives of the "policy for science" are:

- (a) To suggest ways and means for creating resources for science;
- (b) to allocate rationally these resources to various branches and sub-branches of science;
- (c) to generate the necessary science potential in the country.

The main objective of the "policy of science" are:

- (a) To devise ways and means of integrated

social and economic goals of the country with those of science;

- (b) to create a climate necessary for effective and rapid utilisation of results of research so that the scientific effort contribute in a direct manner to the living conditions of an average man in the country.

Keeping this broad framework in view, along with the importance of information collection and processing for the formulation of science policy and paucity of vital information, particularly in developing countries, one can easily see the diverse and large sphere from which it draws information and how inadequate the information very often is. Moreover, continuous updated data is rarely available to the policy maker as required to resolve the various policy issues.

Many times science policy maker require data which does not exist and that have to be collected from primary sources. This is because the R&D institutions and its interface with society is, dynamic and not explicitly understood one. Consequently, with time these data become obsolete.

Due to the dynamic nature of science, regular updating of data is very essential and that could only be achieved through various surveys conducted at regular intervals of time. Thus in order to understand the problems of science policy more clearly, surveys techniques play an important role.

Looking into the problems faced by the scholars dealing with science policy, UNESCO secretariat undertook a project in 1969 to build a system of exchange of information in areas relevant to science and technology policies. The study was conducted by taking into account the theory and practice of science and technology as developed in recent years, which reads as follows:

"Science policy studies have their focus on the systematic investigation of scientific and techno-

logical activities and their function within society. In particular, they are concerned with policy-making in scientific and technological fields, and with the inter-relationship between policy-making, cultural values and social goals".

The approach to the definition of the field of science and technology policies is confirmed by the results of surveys and analyses carried out by the UNESCO secretariat. This indicated that the framers and users of science and technology policies have to continuously collect information about the various aspects of social, economic and political life of a society.

In addition, science policy is affected by various organisations such as government departments, parliamentary groups, academic institutions, productive enterprises, international organisations and so forth and in return these organisations are also affected by science policy. Thus "science and technology policy is like a sprawling railway station, where many inter disciplinary lines meet". The UNESCO study have grouped such areas into sixteen groups.

All these fields are very important for the making of science policy because science policy making includes all the activities involved in the management of the national R&D system in keeping with the social goals. The national R&D system in turn is comprised of the sum of the organised scientific and technological (S&T) resources which are at the disposal of a country.

Thus, one of the prequisites of any governmental science policy is to have a precise and up-to-date knowledge of the situation of the country from the economic, educational, cultural, social, scientific and technological point of view. This knowledge is based on the measurement, analysis and evaluation of a number of complex variables among which and national science and technology potential assumes primary importance. □

Social Foundations of Adult Learning

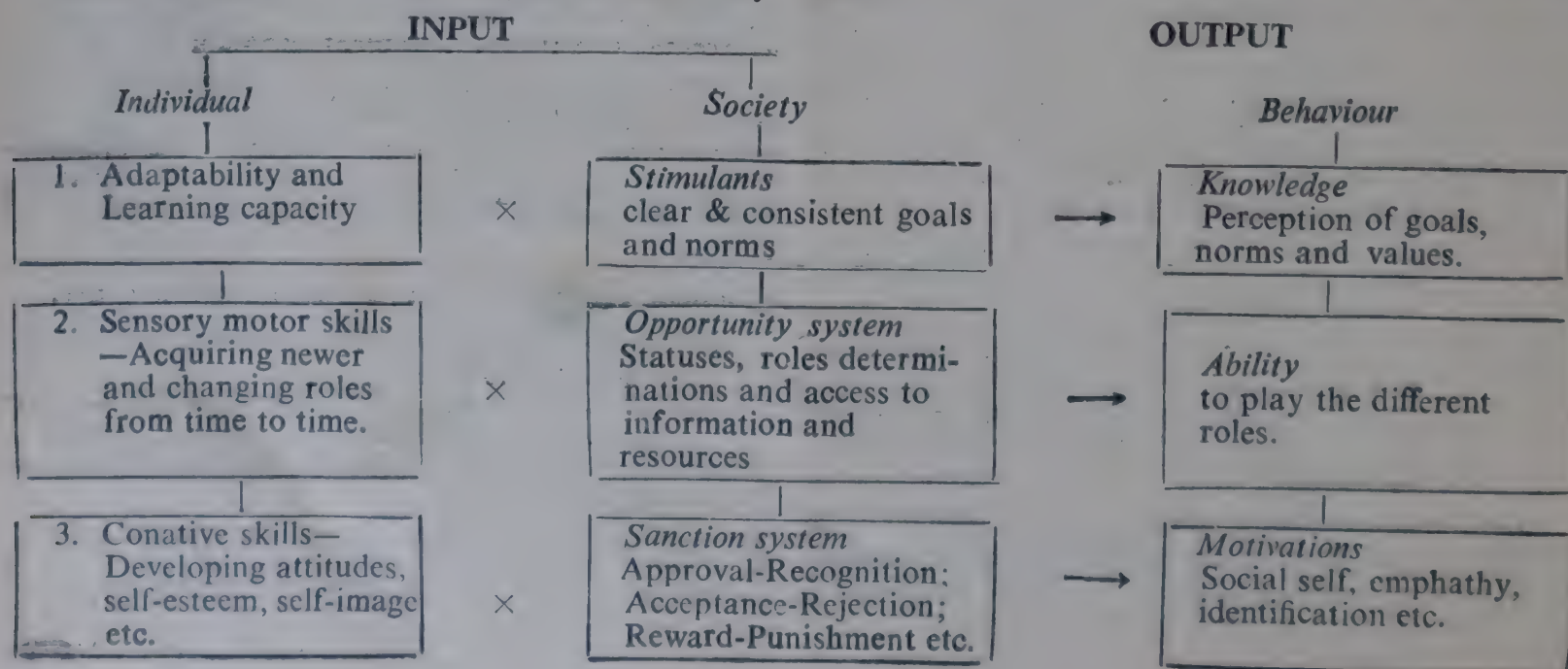
(Continued from page 630)

normative and sanction systems resulting in inculcation of general social values.

Adult socialization should emphasize not only

knowledge and ability but also the opportunity systems.

Given below is a model explaining Adult Socialization :



College Teaching in India

The overriding importance of examination results in India has cast some doubt on the functional value of any facet of teaching other than covering the syllabus as treated by the prescribed textbook in order to prepare the students for the university examinations. This pragmatic approach to college teaching seems to belie the substantial agreement across cultures on what basically constitutes good teaching at the college level, namely, the professor's academic competence and a clear, systematic presentation of the subject matter. Two questions suggest themselves with regard to the Indian context:

- (1) Is the ideal of what constitutes good teaching in Indian colleges substantially different from what is considered to be desirable in college professors abroad?
- (2) Regardless of the ideal itself, what is actually appreciated by Indian students in their college professors?

The ideal of college teaching in India seems to include both a notional or cognitive dimension expressed in the importance accorded to the professor's academic competence and systematic presentation of the subject matter, and a relational dimension observed in the special place given to the student-teacher relationship as an ideal to be striven for. The so called pragmatic approach to teaching for results is not an ideal in itself. If it conditions the teaching process, it is more by way something to be tolerated than a desired goal.

It is possible, then, that in the concrete situation of an Indian college, not only can the relational aspect become less prominent in comparison with the purely academic, but the notional as well as the relational might give way to the pragmatism of coaching students to get good results at the university examinations.

In short, we are left with a puzzling problem. On the one hand, there is a clear agreement on the pre-eminence of the academic or notional function of teaching in common with what is reported abroad. On the other hand, the Indian concept of teaching includes the student-teacher relationship as an important factor of college education, much more explicitly than it appears abroad. But, apart from what is desirable and ideal in the teaching process, there is the strong probability that the social pressures to obtain high percentages at the final examination makes the specific concern of preparing students for the university examinations of paramount and overriding importance.

In light of the above, it is expected that in the concrete situation of Indian colleges, the qualities of a good teacher which will be mostly appreciated by the students will be those directly related to the teacher's way of covering the syllabus in view of the university examinations.

Methodology

Instrument : The data to test the above hypo-

thesis were available from an assessment made by all the students of their professors for each of the courses taught in a college. These were 34 questions in the questionnaire covering a wide variety of aspects of the teaching work. The first question in the questionnaire was about the student's interest in the subject being taught by the professor he was evaluating. Then, the items of the questionnaire went on to touch upon the professor's academic competence, daily class preparation, interest in the subject he was teaching, manner of lecturing, coverage of the syllabus, examination-oriented teaching, attitude to the students in and outside the classroom, power of voice, balanced content-coverage in quizzes and examinations, fairness in giving marks, reference to contemporary events while discussing the syllabus and other relevant details. At the very end there was a question that sought to sum up the overall impression of the students regarding the professor as a teacher of the subject on which the evaluation was being made after having gone through all the details of the teaching work.

Subjects : The data were collected at the end of the academic year as part of a student assessment of the performance of their professors. More than 2500 students had expressed their opinion on the teaching ability and performance of about 72 professors teaching 164 courses.

Design : The item arrangement in the Teaching Assessment Questionnaire lent itself to a multiple regression analysis, in which the overall assessment of the professor made at the end of the questionnaire could be used as the dependent variable in the analysis and all the other specific items could be treated as the independent variables or predictors of the professor's teaching ability.

Hypothesis : Specifically, it is anticipated first that the items directly related to the coverage of the syllabus (item 10) preparation of special notes in view of the examinations (item 17), examination-oriented teaching (item 12) would figure among the aspects of teaching relevant to what constitutes good at the college level; secondly, that in the analysis of the relative importance various types of teaching behaviour, the above items would come off with the highest weightage in the students' assessment of a good college teacher.

Discussion : Against what was hypothesized, it appears that at least in St Xavier's College, Bombay, the efficiency with which a syllabus is covered in class in view of the examinations does not seem to be of the utmost importance in evaluating whether a professor is good or not, as a teacher of the subject. The item which refers to the systematic and thorough treatment of the syllabus, comes fifth in the degree of usefulness and its contribution is significant at the 0.5 level only. Other items dealing with syllabus coverage in view of university examinations come very low in the lists, i.e. items (class notes are

useful for university examination), (treatment of difficult points in the syllabus) and (teaching of the subject is found useful for the university examination) come only as the 13th, 15th and 19th in the list of 23 independent variables, thought to be related to good teaching. All these items are clearly insignificant. Although a cross validation of this finding is imperative before a final conclusion can be drawn it appears quite probable that in an Indian college like St. Xavier's teaching the syllabus for examination results is not considered by the students as the most typical feature of a good college professor.

The order in which the variables have been picked up in the stepwise regression analysis confirms the same trend against what was hypothesized. It was anticipated that because of the importance of the university examinations in the whole system of Indian college education, students would consider a professor a good college teacher if he taught the subject matter of the syllabus efficiently in view of the university examinations. The results do not confirm this hypothesis, but point in the direction of a liberal intellectual orientation and towards the need for interpersonal relations. In other words what the students seem to be looking for in the college professors is that in teaching professors should feel free to refer to contemporary events, recent discoveries in the field and to matters of day-to-day importance. Together with this flexibility of approach, the students want to be treated by their professors with respect as human beings to be helped with their difficulties outside class hours and to have their examination papers assessed with fairness. In short, what Indian college students (in St. Xavier's College, at any rate) seem to be expecting from their professors is that they will use the class room situation to project them on to what is going on in the world of today and to turn the teacher-student relationship into a human relationship of fairness, openness and equality.

An additional remark should be made with regard to the negative regression weight of item-'the systematic coverage of the syllabus'. It would appear that the way of the professor goes about teaching the subject matters only indirectly, namely, if he does not do justice to the syllabus then the chances are that he will not be thought of as a good college teacher whatever else he may be doing as a teacher; but if he does cover the syllabus systematically and thoroughly, then he may or may not be considered a good teacher of his subject depending on other qualities such as his attitude to the students, his readiness to help them outside class hours and his dynamic way of lecturing. A similar explanation can be given for the adequate and comprehensive contents of the terminal examinations and class quizzes. If they are not balanced and comprehensive it is considered to be a bad sign. If they are comprehensive and balanced, being a good professor will still depend on other qualities.

A bit surprising is the fact that a negative sign has appeared against the item concerning 'the academic preparation and competence of the professor'.

Does this result suggest that being very learned is only a negative condition to be a good college professor? One cannot dismiss this possibility in the present analysis. Being well up in a subject is necessary, but not sufficient condition to being considered a good college professor. If he knows his subject well, the professor still needs the dynamic approach and a human attitude in order to make his teaching really appealing and appreciated. It appears, therefore, that in St. Xavier's College what matters is not bookish knowledge or being an egg-head, but the ability to make knowledge come out alive before the students.

In short, then the present data lead to the conclusion that college students in an Indian college expect their professors to be endowed with a broad outlook in their approach to imparting knowledge and with the ability to relate to their students as human beings. The salient feature of this finding is that it goes counter to the easily assumed hypothesis that what matters most is the efficient coverage of the syllabus in view of university examinations. It is true that examination results cannot be ignored; but interest in examination results does not blind students to other and more valuable aspects of education like breadth of vision and a human attitude which they look forward to finding, in their professors. Secondly, the present study has also confirmed Brewer and Brewer's finding that evaluation of real teachers gives out results different from those obtained by theoretical evaluations of ideal qualities of college teaching in general. The present study has disclosed, however, that the trend has been in a direction different from one reported by Brewer: namely, here the emphasis has shifted towards a greater importance of the inter-personal relationship instead of academic competence. Whether this reflects the local conditions of St. Xavier's College, Bombay or the cultural conditions prevalent in Indian colleges in general is a matter for further study. [From an article by J. Filella, S.J. in *Journal of Higher Education*, Vol. 3, No. 3, Spring 1978.] □

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Teaching Research and Extension in Educational Planning

At the invitation of the National Staff College for Educational Planners and Administrators, about 40 university teachers and other experts from specialised institutions in the field of Education, Management, Political Science, Sociology, Psychology, Statistics and other areas related to educational planning and administration met in a conference for three days (April 30 to May 2, 1979) to consider ways of developing this field of study in the universities.

The conference was inaugurated by Dr. Malcolm Adiseshiah who analysed some of the main assumptions which seemed to be guiding the thinking in the field of educational planning and administration. He advised the participants to examine these assumptions critically and to consider how best training of planners and administrators can be organised in the Indian setting.

The objectives of the Conference were to identify (i) the category and level of educational planners and administrators in India who should be the proper concern of the university system; (ii) the level, objectives, content, reading materials, source materials, documentation and modalities of organising practical work for professional training of various groups of educational planners and administrators; (iii) appropriate methods of instruction and evaluation for each course; (iv) priorities of research in the area; (v) modes of inter-departmental, inter-university and inter-agency cooperation in professional training and research in this area; and (vi) conditions and requirements necessary for viability of institutions or agencies which are concerned with professional training of educational planners and administrators.

The Conference had the benefit of hearing Professor Satish Chandra who gave the valedictory

address on May 2, 1979. Professor Satish Chandra was happy to note that the National Staff College had taken initiative in inviting a conference of this nature; he hoped that its deliberations would revitalize teaching and research in educational planning and administration in the universities. He felt that there should be no difficulty in providing support to worthwhile activities in the universities if they chose to strengthen this area. He said that the UGC would be happy to set up a working group to devise ways and means of promoting studies and research in educational planning and administration.

The Conference felt that it was imperative for educational planners to develop, through formal pre-service and in service courses and training and through self-study, a broad awareness of and insight into social, economic, political and cultural forces which impinge on planning and on plan implementation. The universities should provide fertile ground and hospitable climate for developing indigenous scholarship and need-based programmes for research, teaching and extension in educational planning and administration (EPA) in view of their autonomous character and the availability of scholarship and expertise in diverse related fields. The Conference recommended that M. Phil and Research programmes in EPA in the departments of Education and in those other university departments which have developed an interest in this area should, inter-alia, highlight interaction among various strands of thought and action which constitute the social order.

The Conference urged the National Staff College to assume greater responsibility in creating expertise and promoting research and new methods of training in this area. It was also recommen-

ded that the University Grants Commission should provide adequate support to some selected departments and help them achieve excellence in teaching research and extension in educational planning and administration.

Professor M.V. Mathur, the Director, assured the participants that the National Staff College would endeavour, within its constitution, to do its best for promotion of studies and research in educational planning and administration in the universities and make available to them all help for this purpose.

Nainital holds Ichthyology seminar

A three-day seminar on Ichthyology was organised in Nainital under the joint auspices of the University Grants Commission and the Kumaon University. The seminar has recommended that immediate steps be taken to re-orient teaching of fisheries to enable the students to receive proper training for promoting fish culture. It was of the view that basic research on all aspects of Ichthyology such as Taxonomy, Morphology, Physiology and Endocrinology should be encouraged on a large scale to support applied research and training of personnel.

It also underlined the need for conducting Biology including fish population studies on hill stream fishes, measures to promote intensive aqua culture, promotion of Hydrobiological studies including primary productivity and fishery research on regional and ecological basis all over the country.

The seminar suggested the sanctioning of special schemes to attempt induced breeding of all commercially important hill stream fishes and taking up of special surveys in collaboration with geologists for making artificial impoundment for utilising natural waters for aqua culture. Over ninety zoologists from leading universities of the country took part in the seminar.

Education as a Social Process

Education is perhaps the most direct and effective way available of reaching, motivating and changing people—both men and women. However, there can also be, what I would call, for want of a better word, 'miseducation'. Now, 'miseducation' implies educational methods which transmit traditional, irrational beliefs and motivations either through traditional programmes or through ostensibly women-oriented, but badly planned programmes which can be the greatest hindrance to the improvement of women. For instance, there are numerous polytechnics and domestic science colleges for women which only succeed in driving home the out-

understanding of each other. Perhaps the challenge of new science and technology will invigorate us to make the effort to accelerate the rate of our country's progress. But we cannot progress if we are bogged down by these outdated and obsolete ideas.

Since the beginning of civilisation, when man discovered the lighting of fire, human survival has depended upon the transmission of ideas and skills. Science, technology, medicine, architecture or the various forms of self-expression such as music, art, literature, have developed through the transmission of knowledge. The famous histo-

an educated person. It is Bertrand Russell who said a very true thing: 'How nice it is to know things.' That is what we want to do when we go to college. We want to know things and we should not have barriers which stop us from knowing things. In our schools and universities, students and teachers must become equal and enthusiastic partners in this great adventure of exploration and dissemination of knowledge, through group activities, through discussions, through projects, through drama and art, through games so that there is an integrated development of the student's individual personality and adequate scope for his intellectual potential.

It is encouraging to see that at last, people in general have started questioning, analysing and demanding a radical change in our educational system. As far back as 1979, the University Education Commission had remarked that the 'pernicious domination' of examinations is the 'most pervasive evil in Indian education'. By and large, we have continued with the same, old colonial pattern which may have been suited to the limited requirements of those days when what was wanted was to produce white-collared 'babus'. But that system is quite out of context with the requirements today. The entire concept of education needs to be re-oriented so that we can have more and more young men and women who are equipped to meet the challenge posed by the phenomenal breakthrough in science and technology in the advanced countries. Space technology, nuclear energy, electronics, wonder drugs and the latest surgical techniques are forging ahead and widening the gap between the developed and the developing countries. When one talks of progress, one means the ability of a nation to discover and innovate new methods and techniques which are conducive to improvement or imply the possibility of improvement of the living conditions of the society. Progress does not mean flooding the market with imported consumer

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definite but restricted rôle in life; and that, in status, they must forever remain inferior to men.

The basic function of education is not and surely cannot be merely the transmission of knowledge. Education must also induce a certain transformation of traditional patterns of human behaviour so as to bring about a 'psycho-social' evolution. And then, at least in principle, we would accept that our rich heritage and tradition are not confined to hanging on to customs and beliefs which no longer have any meaning and which in fact weaken the very fabric of our society; and we would realise that our heritage encompasses a far wider range comprising our mental, moral, technical and aesthetic potential which must be used as fully as possible for the embellishment and enjoyment of life—for widening the scope of

rians, Will and Daniel Durant, have said a very significant thing that civilisation is 'A co-operative product' and that nearly all peoples have contributed to it. So, you see, it has to be an exchange of ideas, an exchange of knowledge. Here we come across this new fad of linguistic barriers. So, instead of knowledge flowing into us and out from us, we want to bury ourselves inside walls.

There are no walls to knowledge. Knowledge goes over walls because it is the mind of man reaching out to draw from others. So, I don't understand why we put barriers which make it impossible for us to understand each other; why we put barriers to our learning from other countries, because we don't want to have English. This sort of attitude has no meaning—it should have no meaning to

articles. If that were all it meant, then perhaps the oil-rich countries could be said to have attained a measure of progress. But it is not impossible that the advanced countries will find in due course an alternative source of energy, and then, oil will no longer be as vital to human survival as it is today.

We should be much more practical about education. We must be also much more aware of the importance of nurturing our potential geniuses, by giving them the best possible opportunities and encouragement to enable them to realise their capacities to the fullest measure. I was at a medical college a few days ago, and with great pride I was told by the management that 30 percent of the graduates had settled in America or in England. That was as a matter of pride not as a matter of great loss. I think that a large number of our boys and girls who go abroad and who are doing very good work in America and elsewhere, emigrate not entirely because they get higher salaries but because they just do not get a break here. It is a lamentable and deplorable waste of talent and a loss of our most valuable human resources. Unless we can change our educational, economic and social system to stop this brain drain, I believe that we shall be spending more and more on education and getting less and less out of it because, we are just offering these trained people on a silver platter to the advanced countries. The nation requires an increasing number of top-class men and women to achieve a high degree of efficiency and competence in the present-day scientific and technological age. If our country is to advance, we must have outstanding men and women at the top. It is worth considering whether we should not re-plan our university education in such a manner that we are able to produce quality and not merely quantity. We would also need to have a properly worked out and comprehensive selection system both at the admission stage and through the university curriculum.

Basically I think that the problems of women are much more than those of men. If there is unemployment, the chances of employment are far less for women than for men. As I said earlier, unless we are able to change our social attitudes to women, it is no use saying: Oh! everything is open to women; universities are there; there are no legal bars; there are economic opportunities--every possible thing is there. What isn't there is that society as a whole has not changed, except marginally, in its thinking where women are concerned. Admittedly, since independence, opportunities have opened up for women. You have a couple of women Governors; you have a few women Ministers; you have a number of girls in the Indian Administrative Services; there are some even in the Indian Police Service. But, by and large, when girls get into any industrial organisation, they do not always get the chance of adequate training. There are some companies which are broad-minded in their approach and attitudes, but I would say that the large majority of educated women really do not have the chance they deserve. Secondly the entire question of women working presents a biological and social problem because a woman encounters difficulties at home and in her work. If we want to relate women's education to employment, then there must be some supportive services such as housing, some security measures, some health measures, child-care, etc. Unless these are there, it is not possible for educated girls to work. We have provided some creches for the working classes, but there are no amenities of this nature for the middle class women. So, they have to make a choice between a career and marriage at the age of 21 or so and by the time their children are grown up they have passed the age of 30, and very few of them can get back to the discipline of working. They have lost 10 best years of their working life. I do not see why one of the things we women do not do is to provide these sup-

portive services in an organised fashion.

[Excerpts from the convocation address delivered by Smt. Sharda Mukerjee, Governor of Gujarat, at the SNDT Women's University, Bombay].

UNEP plans for solar energy

The United Nations Environment Programme is evolving a massive sub-regional proposal for solar energy generation in South Asia.

According to the UNEP sources South Asian solar energy proposal will be complementary to already existing programmes in India, Iran and Sri Lanka but on a much larger dimension in technical terms involving large megawatt generation to ultimately match the type of suppliers normally expected of fossil fuel based hydro or nuclear plants. The proposal is based on the premise of severe future constraints in fossil fuel resources even if new resources were to be discovered.

The proposal is for instituting an immediate cooperative of existing or planned institutions of fundamental applied research in each of the countries concerned with clear time targets for: (a) establishment of feasible technology for these countries; (b) establishment of the techno-economics related to it and (c) establishment of technological and economic programmes for manufacturing machinery and components involved within the countries concerned. Technical expertise in selected fields of solar energy development could be obtained from countries like India, one of the few developing countries to have a substantial solar energy programme. India's Department of Science and Technology has allocated rupees fifty million for solar energy research and development for a five-year period ending 1982 and currently over thirty institutions are carrying out basic research programmes.

Working of university chairs to be reviewed

Establishment and maintenance of chairs in the Punjab Government financed universities will be probed. A decision to this effect has been taken in Chandigarh at a meeting of the Vice-Chancellors of Guru Nanak Dev University, Panjab University and Punjabi University. The meeting was presided over by the Minister of Education, Mr. Sukhdev Singh Dhindsa. The meeting formed a committee which will include, besides the three Vice-Chancellors, the Education Secretary, Mr. Manmohan Singh to go into the various issues relating to chairs.

The Government also showed its anxiety over reports that the chairs did not finish the stipulated work within a specific time limit.

vities respectively. It was also decided that the Government may consider the appointment of various persons standing first in order of merit at their postgraduate examinations as lecturers, subject to availability of funds without going into other formalities.

Journalism workshop held at Hyderabad

A workshop was organised by the Department of Journalism of Osmania University in collaboration with the University Grants Commission on modernisation of curriculum and training facilities in the universities. The workshop was attended by representatives

jects be introduced in the journalism and communication teaching. It also felt the need for separate courses for sports and film journalism as well. It urged the University Grants Commission to commission journalism departments of Indian universities for compilation and writing of textbooks on journalism to suit the Indian conditions. It also called for greater attention and provide research facilities for communication. The other recommendations included provision for training of journalism students and teachers abroad, provision for journalism students to complete their internship in All India Radio and Television centres and exchange of journalist teachers from one university to another.

500 scientists trained at Patrice Lumumba University

Prof. Vladimir Stanis, Rector of the Patrice Lumumba Friendship University of Moscow said in Delhi that the university has so far trained over five hundred Indian scientists. Since the university started in October 1962, it has students from fifty four Asian, African and Latin American countries. Its main task is to train skilled specialists for the developing countries. During its twenty years of existence, 622 students from other countries have graduated from this university.

The Rector said that its teaching staff consist of 1250 persons all of whom are highly qualified scientists in different disciplines. He said that the teacher-student ratio was 1:5. This affords opportunities for personal attention of the students by the teachers helping the students to achieve high standards of academic studies. The university has published a large number of articles and papers on different scientific and technical subjects. One of the Indian scholars, Prof. H.J. Datta has become the first Indian doctor of science and is now the Head of the Physiology, Biochemistry and Food Department of the Akola University in Vladimir. The university has

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It therefore asked the committee to review the work done so far in each of the chairs in these universities. The committee will recommend winding up of those chairs which have not made any progress. It was felt that there were far too many holidays in the universities and colleges. The Sen Committee had proposed 180 working days in a year. It was decided that universities should gradually introduce 180 working days in a year. The meeting decided to explore the possibility of associating Punjabis in UK to raise funds for the setting up of a chair of Sikh Studies in Cambridge and Oxford Universities. The Director of Public Instruction (Colleges) has been directed to revise the criterion governing weightage to extra-curricular activities while selecting lecturers. The meeting fixed 80:20 ratio between marks for academic attainments and extra-curricular acti-

from different university departments of Journalism. The workshop felt that the journalism courses should form an integral part of the university education and suggested to the University Grants Commission and State Governments to provide qualified teachers and teaching aids. Introduction of Master's course and discontinuance of the diploma course was also suggested.

A call was made for revamping journalism and communication courses and interaction of similar courses in regional languages was made by the delegates attending the workshop. Another important recommendation was regarding provision of proper representation of journalism teachers on bodies relating to the press and mass media. The workshop felt that in view of the increasing importance of rural development, health communication and agriculture, special courses on related sub-

84 sub-faculties and its staff and students number 9,700 and 6,500 respectively coming from 103 countries.

PU degree for Pathak

The Panjab University Syndicate at its last meeting held in Chandigarh recommended that a Degree of LL.D. (honoris causa) be conferred on Mr. G.S. Pathak former Chancellor of Panjab University and former Vice-President of India. It also recommended that a degree of D.Sc. (honoris causa) be also conferred on Dewan Anand Kumar, former Vice-Chancellor of the university, at the next convocation. The Syndicate also approved the recommendations of a committee to improve the existing procedure for the election of ordinary fellows from the registered graduate constituency. The Council permitted the employees to raise their subscription to the Provident Fund up to 30 per cent of their salary subject to the university's contribution of 10 per cent of the salary.

Kashmir Varsity Seminar

A symposium and an exhibition on Central Asia and India were held in Kashmir University, Srinagar, under the auspices of the Department of Central Asian Studies of the university. The symposium which was held under the chairmanship of Prof. A.A. Saroor, Head of the Department of Iqbal Institute, was inaugurated by Prof. Rais Ahmad, Vice-Chancellor of the University.

The participants included, among others, Dr N.R.B. Banerjee, Director of the National Museum, New Delhi, who read out a paper on the influence of Kashmir on the art of Nepal. Prof. S. Maqbool Ahmed, Director of the Centre for Central Asian Studies, discussed various aspects of the relations between Kashmir and Central Asia. The exhibition depicting various phases of Central Asia and Culture was also inaugurated by Mrs. Shaikh Rais Ahmed. The

visitors evinced keen interest in various displays and artifacts of Central Asia. Dr. K.N. Pandita was the incharge of the seminar.

Lucknow organises refresher course

A two-week seminar-cum-refresher course for teachers of north Indian universities of the Central Institute of English and Foreign Languages was inaugurated in Lucknow by Justice B.N. Jha. Mr. Justice Jha in his address emphasised the need to improve the textbooks in English and said that quantity was no substitute for quality.

Dr. Satya Vrat Singh, former Vice-Chancellor of Sanskrit University, Varanasi, in his presidential address said that synthesis of Sanskrit poetics and western stylistics could be fruitfully achieved at the Central Institute of English and Foreign Languages. Earlier Dr. D. Thakur Officer-in-charge of the centre, said that it aimed at improving the teaching of English and that there was a need for discussing 'Indianness' in the field of literary and linguistic studies and research.

Institute of ophthalmology for Bihar

Dr A.R. Kidwai, Chancellor of Bihar Universities has made a strong plea for setting up of a Post-graduate Institute of Ophthalmology in the state. He said that Uttar Pradesh had two such institutes but Bihar had none. He wanted that the number of eye camps should be doubled in the near future so that adequate ophthalmic care could be provided to the people of Bihar. He would extend his full support for the opening of the institute.

Dr B.P. Kashyap of Ranchi Medical College in his presidential address at the seventh Bihar State Ophthalmological conference said that in Bihar, medical colleges are inadequate and poorly staffed which had come in a big way in the development of medical education in the State. He pleaded for immediate steps to rectify the situation.

Degree in legal philosophy

The Rajasthan University is the first university in the country to institute a degree in legal philosophy with the assistance of the University Grants Commission. Dr Chand Mal, Professor-in-charge, said in Jaipur that the idea of developing this new subject was mooted about seven years ago but the university has been able to award the first degree of doctorate on the subject now. It is difficult to find experts to be examiners in this new discipline. Miss Sarala Kalla has been the first recipient of this degree. Presently the new subject is a part of the Philosophy Department of the university but it would have its own department later.

Fisheries Corporation for UP

The Uttar Pradesh Government in collaboration with the World Bank proposes to spend a considerable amounts of money to speed up fish seed production programme in the State. It proposes to set up a Fisheries Development Corporation for this purpose. The Corporation will function as a limited company with an authorised capital of Rupees one crore with State Government purchasing shares amounting to more than rupees forty two lakhs.

It is proposed to establish four fish farms under the corporation. Fish seeds produced in these farms by induced breeding through indigenous and exotic fish will be made available to the fish breeders in rural areas. With a view to achieving this objective schemes have been formulated for production of quick multiplying fish in small water reservoirs with the assistance of the World Bank in the districts of Azamgarh, Deoria, Sultanpur, Pratapgarh, Bara Banki, Gonda, Varanasi, Jaunpur, Allahabad, Lucknow, Unnao, Faizabad, Rae Braeli, Basti, Gorakhpur, Ghazipur and Balia. The programme has already been launched in Azamgarh, Deoria, Sultanpur, Pratapgarh and Bara Banki districts with an investment of more than rupees six lakhs.

The fish breeders of these districts will be provided gram samaj ponds on long term lease. Loans at the rate of Rs. 10,000 per hectare will be given to fish breeders for improvement of these ponds through commercial banks. A subsidy of 25 per cent will be provided on these loans by the State Government. Efforts will also be made for the marketing of fish produced in these ponds through cooperative societies to ensure fair return to fish breeders.

Similarly persons engaged in private fish breeding in Faizabad, Gorakhpur, Ballia, Rai Braeli, Unnao, Lucknow, Varanasi, Basti and Ghazipur districts will be given ponds on long term leases and loans and subsidy for improving their ponds and making them more productive.

NEHU Pro-Vice-Chancellor visits Nagaland campus

Recently Dr. S. C. Banwar, Pro - Vice - Chancellor, NEHU visited different Departments of the College of Agriculture, Medziphema and the Kohima Campus of the University. The purpose of his visit was to get first hand knowledge of the difficulties faced by the infant campus of the NEHU in Kohima. The Pro Vice-Chancellor met the teachers and the students where a mutual exchange of ideas took place. He also met Mr. P. Maosang, Officer on Special Duty (Nagaland Campus) and discussed with him all the problems of the teachers and the students. The Pro Vice-Chancellor assured the teachers and students all the assistance of the University. The teachers and students expressed their common problems particularly the scarcity of library books. They urged the Pro Vice-Chancellor to immediately solve this problem. The Pro Vice-Chancellor promised them that he would immediately look into the matter and that he would send books as fast as possible to the Kohima Campus. It is reported that the Pro Vice-Chancellor told the teachers and the students in a meeting that he would send a mini bus to the Campus to

solve the transport problem there.

In this connection, the Vice-Chancellor recently appointed three new teachers in the Department of English, Kohima and another tribal teacher in the College of Agriculture, Medziphema Nagaland. The Pro Vice-Chancellor said that NEHU is making all possible effort to man the different Departments in Kohima and to fully equip the libraries and laboratories of the Campus.

At present there are one hundred and fifty students studying in the different disciplines in Nagaland. It is reported that the teachers and students of Nagaland Campus expressed their satisfaction with the work of the university keeping in mind that this university is an infant university in the region. They also appreciated the kind hospitality of the Government of Nagaland in providing land for the Campus and accommodation to the teachers and students. Two nearly completed buildings are coming up in the new campus. The Pro Vice-Chancellor urged the students and teachers to be patient with their difficulties and he said that in course of time he would solve their problems. He also expressed satisfaction to see that more and more tribals students are taking advantage of the different disciplines of the University. He said that he was happy to see that a family atmosphere is prevailing in the campus. He exhorted the students to co-operate with their teachers and the administrative staff to overcome and solve problems. In his speech the Pro Vice-Chancellor said that a spirit of dialogue should hover in the campus. The Pro Vice-Chancellor hoped that in the near future the North Eastern Hill University would fully satisfy the hope and the aspirations of the Region.

BARC'S RIA procedure for diagnosing hypertension

The Bhabha Atomic Research Centre has standardised a radioimmunoassay procedure for

measuring plasma renin activity, the precise assessing of which helps in diagnosing and differentiating the various forms of hypertension. This work was carried out by the Radiopharmaceuticals Sections of the Isotope Group at BARC.

Renin, a proteolytic enzyme secreted by the kidneys, acts as part of a complex feedback mechanism for regulating blood volume and pressure. Renin activity can be calculated indirectly by measuring angiotensin-I, which is formed by the action of renin.

The radioimmunoassay procedure developed at BARC is very sensitive: it can detect upto one picogram of angiotensin-I.

The work on developing an antibody for angiotension, (a low molecular weight polypeptide), and its isotopic labelling pose special problems. Angiotensin-I was labelled with I^{125} for use in this radioimmunoassay under carefully controlled conditions and the radioactive angiotensin-I was separated from other impurities by gel filtration. Antisera of high titre were raised in rabbits using angiotensin-I conjugated with bovine serum albumin.

Using this radioimmunoassay procedure, blood samples of more than 100 patients have been evaluated at the J. J. Hospital, Bombay in collaboration with its Department of Medicine. The results have confirmed that measurement of renin activity by radioimmunoassay is very useful for diagnosis of hypertension cases.

Radiopharmaceuticals

The Isotope Group of BARC has a continuing programme for developing radioimmunoassays of a wide variety of biologically active hormones. These assays are of great use in the differential diagnosis of several disease states. Kits for radioimmunoassay of insulin, human placental lactogen, tri-iodothyronine and thyroxine are being supplied regularly by BARC to many medical institutions. Over 25,000 radioimmunoassays have been carried out in the country from

such kits during the last 2 years for evaluating thyroidal diseases, and in the early detection and studies of complications in pregnancy, juvenile diabetes, as well as diseases associated with hormonal disorders. The BARC also supplies a wide variety of radiopharmaceuticals for in-vivo diagnostic applications.

Inter-regional seminar on ground water in rocks

In order to discuss problems dealing with ground water resources evaluation in hard rocks, UNESCO has convened an 'Inter-regional seminar on Ground Water in Hard Rocks' at Coimbatore from 22 November to 20 December.

It has been organized in co-operation with the Central Groundwater Board of India; The Royal Institute of Technology, Stockholm; and the Tamil Nadu Agricultural University, Coimbatore (India), with the financial assistance of the Swedish International Development Authority (SIDA).

Thirty specialists from seven South Asian and South East Asian countries, including Afghanistan, India, Iran, Malaysia, Pakistan, Sri Lanka and Thailand, are participating in this Seminar.

The programme of the Seminar includes lectures and practical work dealing with: Geology and tectonics of hard rock aquifers; Hydrogeology of hard rock aquifers; Aquifers in weathered rocks; Hydrochemistry of hard rock aquifers; Investigation and exploration techniques; Assessment of water resources.

Lectures will also illustrate the main theoretical aspects of occurrence of ground water in hard rocks. Practical field work and excursions will also be apart of the Seminar.

New medical awards instituted

The R. D. Birla smarak endowment set up by the Bombay Hospital Trust and the medical research centre of the hospital will recognise and reward out-

standing work in medical and related fields both at home and abroad.

The endowment has set up an annual national award of rupee one lakh which will go to an Indian carrying out research within the country and a triennial international award of rupees five lakhs for outstanding work in the field of medicine. A jury comprising eminent scientists, distinguished persons in public life and outstanding doctors in the medical field will select the winners. The last date for receipt of nomination for the national award is March 31, 1980 and that for the International award is August 31, 1980.

The endowment will also award scholarships and fellowships for postgraduate education and research in medical and related fields. Applications for fellowships should reach the office of the Director of the endowment at the Medical Research Centre, Bombay Hospital, Bombay by the end of May, 1980. The endowment will also provide help to private charitable hospitals and medical institutions mainly in the rural areas.

Public examination abolished in Karnataka

The Karnataka Government has decided to abolish public examination for the first year Pre-University course from April 1980 on the recommendations of the Secondary and Pre-University Education Director. It has requested the colleges to conduct class examination in place of the public examination. The students who are in the second year but are still to complete the first year will also have to take the class examination for completing the failed subjects. Their second year results will be announced only after they pass all the first year subjects.

The abolition of the examination will relieve the strain on students at a transitional period from school level to college level. Besides, it will facilitate easy migration from one university to the other since most of the universities do not have such

public examination. The abolition of the examination was thought to be essential to bring about uniformity in the national pattern of education.

Ban on medical colleges

The Union Government has decided not to allow opening of any more medical colleges in the country. Mr. Rabi Ray, Union Minister for Health and Family Welfare made this announcement in Cuttack recently. He said that the State Governments have been advised to take early steps for establishment of a university on health science in each State in the light of the recommendations of the recent national conference on medical and health education. These universities would conduct research on different disciplines of the Indian system of medicine—Ayurveda, Unani, Siddha, homoeopathy and naturopathy including Yoga. The Minister said that the Indian system was more suited to the conditions of the country particularly in the rural areas. There were many serious diseases which could be cured only by the Indian system.

Book purchases stopped

The University Grants Commission, due to paucity of funds, has failed to make available grants for purchase of books to the universities this year. This had not only hit the book trade but had affected colleges also as they could not purchase new publications. Mr. V. Balaraman, President of the Booksellers and Publishers Association of South India and Mr. N. Parthasarathy, Joint Secretary have requested the State Governments in Madras to provide the necessary grants to the universities to enable them to purchase books for their libraries. The case of Karnatak University has been cited where the Government has provided special grants to the universities in the State for this purpose.

Gandhi seminar at Rome

The Oriental Institute of Rome organised a seminar on Mahatma Gandhi in the last month. Mr. A.K. Damodaran, India's Am-

bassador, at the valedictory function stressed the integral relationship between theory and practice in Mahatma Gandhi's career. The Institute President, Prof. Gerado Gnoli, presided and a large number of distinguished scholars and experts participated in the seminar. Prof. Giuseppe Tucci, former President of the Institute who had won the Jawaharlal Nehru award for international understanding for 1976 also participated in the deliberations.

Panel for students' problems

The Vice-Chancellor of Osmania University has constituted a committee consisting of the Principals of the campus colleges, Deans and Head Students' Welfare, Chief Proctor and the Chief Warden to look into the problems of the campus colleges students. The panel is expected to give its recommendations to the Vice-Chancellor for necessary improvements.

Bangalore opts for re-evaluation

The Bangalore University workshop on improvement of university examinations headed by Mr. Y. Ramachandra has recommended that the revaluation of answer papers should be done at a cost of Rs. 100 for each script. Mr. Ramachandra said that the students should apply for revaluation within ten days of the receipt of marks cards. The workshop recommended the cancellation of the first year degree examination and also suggested that the question bank should be created as an advisory body.

Nehru awards

Mr. K.P.S. Menon, Chairman of the Soviet Land Nehru Award Committee announced the awards for Mr. Umashankar Joshi, former Vice-Chancellor of Gujarat University and a noted Gujarati author, Mr. D. Jayakanthan, a Tamil writer, Mr. Mrinal Sen, a well known film director and Mr. Sohan Singh Josh, a well known revolutionary and writer in Punjabi and English.

The award carries a honorarium of Rs. 10,000 each in cash and entitles the recipient to a fortnight trip to the Soviet Union.

Urdu academics for States

The two-day annual session of Anjuman Tarraqqi Urdu Hind which concluded in Chandigarh demanded that Urdu academics should be set up in Haryana, Punjab and Himachal Pradesh. It also demanded that Himachal Pradesh should introduce Urdu as an elective subject in colleges and that the universities at Patiala and Amritsar should set up departments of Urdu and start graduate courses in Urdu. It requested the Haryana and Punjab Governments to include Urdu in the curriculum in the secondary and higher secondary schools.

Twenty-three delegates who are elected members of the General Body and different committees of the Anjuman participated in the session.

Canadian grant for Indian scientist

Dr. Lalit Srivastava of Simon Fraser University in British Columbia has been awarded a \$50,000 grant to carry out advanced studies on a sea weed that can be used as food, fertilizer, emulsifier, and even in blood transfusion. The grant from the provincial Government may well pave the way for the development of a new industry in that part of Canada. As it is the commercial harvesting of kelp is an important commercial venture in California, China, Japan and some other European countries.

Some kelps, according to Dr. Srivastava, have tremendous ecological properties unlike most other plants they begin their growth when available light is given. In addition they have the capacity to fix carbon in the dark as a supplementary process to photosynthesis.

Bihar proposes code of conduct

The Bihar Government proposes to introduce a code of con-

duct for the university and college teachers. The proposed ordinance provides that the Chancellor could entertain any complaint against any teacher of the college or the university and after holding enquiry he could pass orders which will be binding over the university.

The status and position of the Finance Officer is also sought to be enhanced. Presently he occupies the third position in the university.

The intermediate education council would govern the intermediate teaching but till its full constitution, the universities would be asked to carry the affairs of teaching, examination and results of intermediate classes. Universities have been empowered to depute any teacher of the university service to the proposed inter-colleges council. The university budget now onwards would be passed in the first meeting of the Senate to avoid delay in seeking government's approval and release of grant.

Ecology and Immunology

Dr. V. Ramalingaswami, Director-General of the Indian Council of Medical Research while inaugurating a twelve day workshop on immuno-diagnostic methods at the Postgraduate Institute in Chandigarh said that most of the parasitic diseases posing public health problems in India and abroad are intimately linked with ecology which is changing fast due to developmental activities. He said that the Ministry of Agriculture was pumping water into vast areas and the question of disposing and management of that water was very important to human health. We are building roads, bridges and houses which in their wake bring about a tremendous change in the environment. And then we wonder why on earth Kalaazar broke out in five districts of Bihar. If we blindly follow a particular line of approach, even immunology may not be able to help us unless we have a much wider view of the genesis of parasitic diseases.

Dr. Ramalingaswami said the country today was passing through

a stage of technological despair in many parasitic diseases which at the same time pose a technological challenge. The story of setbacks in the control of malaria through the simple, single device of indoor residual spray with DDT is well known. How and why it failed can be debated over a long period of time but it is obvious that it is a multifactorial thing. It would be wrong to say that the malaria control programme has failed because vectors have become resistant in many places but at several other places the level of resistance is such that by intensifying the use of insecticides malaria can be combated. All this proves that even if one has a powerful technological weapon it will become useless if one does not have a proper understanding at the micro level. This is exactly what has happened in the case of the control programme. There must be a proper understanding of the people, their life style and their society. People do not want to have their houses sprayed against malaria, around Dussehra because that is the time when they have their houses white-washed and do not want them to be spoiled. All such factors must be taken into consideration if the best use is to be made of the available technology. This is just an example to show that we are in a state of technological despair. It may partly be a problem of vector resistance, partly a problem of Arabs having decided to raise the price of petrol, but we are now stuck at a position where apart from bio-environmental methods that we can still use we have to look at fresh avenues.

The scientists working in the tropics, particularly in India, have a lifetime's opportunity to engage in an activity which is not only directly linked with the problems of the people of this country but is also very fascinating. India does not pay its scientists as well as many other countries do. It is linked with our economy. But there is one thing that India offers and that is the opportunity to work in the most exciting fields, particularly in the field of parasitic immunology.

The workshop was attended by

medical scientists all over the country. Earlier Dr. J.S. Neki, Director of the P.G.I. welcomed the delegates and Dr. R.C. Mahajan, Professor and Head of the Department of Parasitology, outlined the scope of the workshop. Prof. A.B. Chaudhary delivered the keynote address and Dr. R.R. Chaudhary, Dean, P.G.I. proposed a vote of thanks.

National Planning for Defence

Dr. Raja Ramanna, Scientific Adviser to the Defence Minister, while delivering the keynote address at a function held at the Gas Turbine Research Establishment in Bangalore said that the defence preparedness of a nation reflected the state of its industrial preparedness. He said decisions on aviation development similarly required prior assessment of technical capability. Since the obsolescence rate was very high in the aircraft industry, it was a very high risk proposition for an idea that might look good today but might fall at the altar of practically with the end-user five years hence. The long gestation period for engines, airframe, avionics and other related systems dictated that priorities and plans must be made well in advance. In this, the role of research and development was vital for the user which in India's case were her armed forces, had to have confidence in the product. India has made great progress in the development of materials technology and this would help in the development of the aircraft industry in the country. Many systems in the aircraft, besides the engine, constituted major parts as far as costs were concerned and their production was also a part of the Industry's responsibility. Research and development efforts made today would bear fruits a decade hence and for that planning for the year 2000 AD is just the thing we should be doing. At one time it was thought that air defence and offence would be completely handled by missiles but subsequent developments had shown that the age of manned aircraft had not yet passed.

Licence production or collaboration of this type may be good in the beginning but did not help the industry within the country. Research & development had no meaning when it was carried out between the high technology nations and the country with a low-level sophistication in research and development. What was needed was international collaboration in research and development on the basis of give and take. No nation might want to part with its research and development progress but an exchange of information at seminars as the present one might help build bridges of understanding where none existed before.

Patterns of farm technologies

Dr. L.D. Swindale, Director, International Crop Research Institute for Semi-Arid Tropics said that the national planning objectives should have substantial influence in the transfer of agricultural technology to the farmers. Dr Swindale was delivering the valedictory address at the regional seminar workshop on agricultural research planning held in Hyderabad in this month. The six-day seminar workshop sponsored by the Southeast Asian Regional Centre for Graduate Study and Research in Agriculture, Philippines and National Academy of Agricultural Research Management, Hyderabad was attended by delegates from different countries of Southeast Asia.

Dr Swindale said that there were institutional and social issues and costs involved in the transfer of technology. The national planning objectives should be maximising the rate of income growth and self reliance. The international agricultural research centres were created specially to assist in the transfer of agricultural technology and should take up agricultural research on a large scale. He warned that appropriate technology might prove inappropriate if the information gathered about farmers' needs and resource endowments were inapplicable. A case in point was the use of bul-

locks versus tractors in farming systems technology. He said he was proud of bullock-powered technology but to some it might be inapplicable to the socio-economic conditions in which they were working. It was necessary for the researchers to concentrate not on the bullocks themselves, but on the power requirements and efficiencies of various cultural operations. He also stressed the need for creation of adaptive indigenous agricultural research so that the transfer of technology could be more easy. Emphasising the importance of training he said it would contribute directly to technology transfer. It would help create awareness of the existence of the technology in different sectors. The need to develop technologies appropriate to conditions in developing countries was a subject of controversy. Inappropriate technologies led to unemployment and waste of scarce resources.

Dr. Swindale stated that ICRISAT farming system research programme developed a new technology that could enable rainy season use of the deep vertisols of the semi-arid tropics. It offers a hope for substantially increased food production from the semi-arid soils and improved incomes and standards of living for the small farmers.

Panel for Planning Board

The Commission on public expenditure has constituted a four-member study group to go into the organisational set up, procedures and personnel structure of the Planning Commission and suggest methods for their streamlining. The group will also identify areas where work done by the Commission and other Government agencies overlap and suggest ways of better coordination. The instrument for plan formulation, monitoring and evaluation of projects are also to be studied to improve their effectiveness.

Dr. H.K. Paranjpe, Chairman, Rail Tariff Inquiry Committee would be the chairman of the group. Other members are: Mr. Lovraj Kumar, Chairman, Bureau of Industrial Costs and

Prices, Mr. S. Guhan, Professor Madras Institute of Development Studies and Dr. K.S. Parekh, Professor, Indian Statistical Institute, New Delhi.

Marine pollution project started

The Economic and Social Commission for Asia and the Pacific and the Swedish Environment Protection Service have jointly initiated a project to protect the environment in the marine and coastal areas of the countries in the region.

A national seminar on protection of the marine environment, sponsored by the Union Government's Science and Technology Department was held at the National Institute of Oceanography, Panaji. It has been suggested to take up the programme in two phases. The first phase of the project will provide a forum for the exchange of views and information among the participating countries and national agencies responsible for the protection of the marine environment and the related ecosystems. An integrated approach will create an awareness of the problems regarding the protection of the marine and coastal environments. The second phase of the project includes a four-year programme to strengthen the countries, capacity to deal with the problems concerning their marine and coastal ecosystems. It will incorporate provisions for the establishment of a regional training centre for the protection of marine life.

More autonomous colleges for Madras

The Syndicate of Madras University has recommended that five more colleges be considered for the grant of autonomous status. These colleges are: Stella Maris College, Women's Christian College and Vivekanand College, all in Madras and Coimbatore Institute of Technology and the Government College of Technology in Coimbatore.

Mr. G.R. Damodaran, Vice-Chancellor, soon after the Syndicate meeting said that further in-

formation was being sought from these colleges about the facilities available in these institutes. The university will also consider fresh applications received from Sri Ramakrishna Mission Vidyalaya Arts College, Coimbatore and the Madras Law College for the grant of autonomy. At present six Colleges in Madras have the autonomous status.

A six-member Syndicate committee will soon consider the problems faced by affiliated colleges in conducting the university examinations. The committee has been authorised to suggest measures for the smooth conduct of examinations and would tour a number of centres to elicit the views of the principals.

Syndicate proposes various changes in the Act

The Madras University Syndicate adopted a resolution at its last meeting suggesting repeal of a provision in the University Act which made full time teachers of the university ineligible for membership of the Syndicate. The resolution had recommended to the State Government to amend the Act in such a way that no person would be eligible to serve on the Syndicate or other university bodies for more than two consecutive terms. The other important changes suggested by a committee appointed earlier for recommending changes in the composition and powers of the Syndicate provided for the election to the Syndicate of two whole-time professors of the university, including a professor in the science faculty. It was also suggested that the student members of the Senate and the non-teaching staff of the university should not be eligible for election or nomination to the Syndicate. The Committee also made an exhaustive review of the powers of the Syndicate and has suggested the total restructuring of the Act.

The Vice-Chancellor, Dr. G.R. Damodaran, said that during the next fifteen days the State Government would have discussions with the university authorities on the committee's recom-

mentations and the views expressed by the Senate members would be placed before the Government.

Maharashtra breakthrough in agriculture

Mr. Sadiq Ali, Governor of Maharashtra has said that the Maharashtra has achieved a breakthrough in farm technology and food production would therefore go up to 138 lakh tonnes by 1990. Though the scope for bringing more land under cultivation was limited, the increase in irrigation facilities from 5.5 per cent of the gross cropped area in 1951-52 to 11.5 per cent in 1978-79 had contributed to increase in food production. The sugarcane production in the State has gone up by four times during the last twelve years. But there is no substantial increase in cotton production and much less in oil seeds.

M.Sc. in Sericulture

The Bangalore University would be starting a Master's degree course in sericulture from the next academic session. Dr A.R. Kasturi, Head of the Department of Zoology and Dr M. Nagaraj, Head of the Department of Botany, Central College, Bangalore, made this announcement. In the beginning about a dozen graduates with Botany and Zoology as their optionals would be taken for the course. It would be further broadened to match the needs and utility of the course.

Pay of coaches revised

The Finance Board of Panjab University at its meeting held last month approved the revision of the pay scales of coaches to Rs. 700-1600 with assessment bar at Rs. 1300/-. This decision would meet the long standing demand of the Coaches and the Panjab University Teachers Association. The UGC pay scales would be introduced from January 9, 1978; the date from which the teaching assistants were granted this grade.

Science Congress to be held in February

The 67th session of the Indian Science Congress scheduled to be held on January 3, 1980 at Gauhati has been deferred due to mid-term Lok Sabha elections. According to the Indian Science Congress, the session would now be held from February 1 to 5, 1980 at the Gauhati University.

First book on tourism in India

Dr Tej Vir Singh, Director, Institute of Himalayan Studies, Garhwal University, has been commissioned by the University Grants Commission for writing a book on Tourism in India. This would be the first textbook on the subject lately introduced in many Indian universities including Garhwal and Kumaon.

Madras medical college to be upgraded

The Tamil Nadu Government is planning to upgrade the Madras Medical College into a postgraduate institute during the current year. Funds are being allocated for this purpose and the Government would soon undertake a detailed study of the working of the Postgraduate Medical Research Institute at Chandigarh and the All-India Institute of Medical Sciences at New Delhi before finalising the plans.

UGC cuts Calcutta grants

The Calcutta University is facing a big cut in the UGC grant for Sixth Plan period. It is expected that the university will not get more than one crore now whereas the Fifth Plan period allocation by the UGC was to the tune of Rs. three crores. Dr. R. K. Poddar, Vice-Chancellor of the university said that this drastic cut in the grant would have a serious impact on the university. Many development and expansion programmes would have to be either abandoned or postponed in the absence of sufficient funds.

UGC seminar on Makhdum's works

The Vice-Chancellor of Patna University, Dr. K.N. Prasad, in-

augurated an all-India seminar on Makhdum Sharauddin Ahmed Bihari held recently at Patna. Dr. Prasad lauded the great work by the Suffi writers of India particularly Makhdum Saheb's contributions and wished that the great heritage would continue to illuminate the path in future.

The seminar was sponsored by the University Grants Commission and was organised by the Department of Persian of the university.

Management of science for development self-reliance

The All-India Symposium on Management of Indian science for Development and Self-Reliance is being organised by the Society of Young Scientists (All India Institute of Medical Sciences), New Delhi from February 6 to 8, 1980. The proposed topics for discussion at the symposium are : Evolution and current status ; the Instruments of Science Policy; Science & Technology for Development & Self Reliance ; Management of R & D in Research Institutions & Universities; and Role of Scientists in Social change.

Personal

1. Dr Bhagat Singh has been appointed Vice-Chancellor of Punjabi University, Patiala.
2. Dr B.R. Agarwal has taken over as the Vice-Chancellor of Chandra Shekhar Azad University of Agriculture and Technology, Kanpur.
3. Dr. Manindra Mohan Chakrabarty has been appointed Vice-Chancellor of Jadavpur University.
4. The Indian Agricultural Universities Association has presented a plaque of honour to Dr. O.P. Gautam, Director-General of the Indian Council of Agricultural Research for his outstanding contributions to agricultural education and research during the last thirty years.

A list of Doctoral Theses Accepted by Indian Universities

PHYSICAL SCIENCES

Mathematics

1. Bhargava, Gyan Prakash. On some estimates in the theory of univalent and multivalent functions. Kanpur University.
2. Choubisa, Mahesh Prasad. A study of special function of two variables. University of Udaipur.
3. Loganathan, M. Extensions of regular semigroups and cohomology of semigroups. University of Madras.
4. Mahajan, Ramesh Ramchandra. A study of certain aspects of generalised hypergeometric function of two variables and generalised transforms of two variables. Nagpur University.
5. Reeta. On special classes of problems in mathematical programming. University of Delhi.
6. Singh, Kalp Nath. Certain studies in the summability of infinite series. Banaras Hindu University.
7. Singh, Satya Dev. A study of certain orthogonal and non-orthogonal polynomials. Banaras Hindu University.
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Biology

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Biochemistry

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Botany

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Intensive involvement in one or more conventional/emerging areas of Chemical Engineering Education and Research.

For the post of Assistant Professor
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For the posts of Professor & Assistant Professor

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3. Hydraulic engineering with specialisation in Water resources systems /wave dynamics/coastal and offshore engineering/sediment transport.
4. Transportation Engineering/Urban Engineering
5. Aerial photo interpretation/Remote Sensing
6. Geology with specialisation in Engineering geology / economic geology / petrology and geomorphology
7. Construction engineering and management.

4. Electrical Engineering

For the post of Professor

(i) Communication Engineering (ii) Controls and Instrumentation (iii) Electrical Machines and Drives (iv) Solid State Devices (v) Power Apparatus and Systems

For the post of Assistant Professor

(i) Communication Engineering (ii) Solid State Devices (iii) Power Apparatus and Systems (iv) Analog and Digital Circuits.

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7. Chemistry

For the post of Professor

- (i) Chemistry of Natural Products, Organic Synthesis and Physical Organic Chemistry,
- (ii) Coordination Chemistry and Physical Inorganic Chemistry
- (iii) Solid State Chemistry

For the post of Assistant Professor

- (i) Chemistry of Natural Products, Organic Synthesis and Physical Organic Chemistry
- (ii) Coordination Chemistry and Physical Inorganic Chemistry
- (iii) Chemical Thermodynamics

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For the post of Professor and Assistant Professor

Experimental research work is being carried out in the areas of Solid State Physics including Mossbauer Studies, Nuclear Physics, Atomic and Molecular Physics, Magnetic Resonance (ESR and FMR), and X-ray crystallography and Spectroscopy. Theoretical investigations are carried out in the areas of Solid State Physics, Nuclear Physics, Elementary Particle Physics and Atomic and Molecular Physics.

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Experimental Solid State Physics. Candidates with experience in the area of Magnetic Materials will be preferred.

13. Environmental Engineering Group

(For the post of Assistant Professor only.)

Ph.D. in Environmental Engineering with Bachelor's degree in Civil Engineering.

The posts are permanent and carry allowances such as D.A., C.C.A., H.R.A. as per rules of the Institute which at present correspond to those admissible to Central Government employees stationed at Bombay. Applications should be made on the prescribed form obtainable free of charge from the Registrar of this Institute by sending a self-addressed envelope of 25 cm x 10 cm size. Indian candidates abroad may apply on plain paper in duplicate. Candidates employed in Government / Semi-Government Organisations or Educational Institutes should apply through proper channel. Completed application should reach the Registrar, I.I.T., P.O. I.I.T., Powai, Bombay-400 076 by 10th January 1980.

OSMANIA UNIVERSITY

HYDERABAD-500 007 (A.P.)

Advertisement No. 18/79

November, 1979

Applications, in the prescribed form, together with the registration fee of Rs. 5/- are invited for the post of Lecturers in Electrical Engineering, in the University Service so as to reach the undersigned on or before 31st December 1979.

Qualifications

A first class Master's Degree with consistently good academic record.

Desirable Areas of Specialisation

- (i) Power Electronics
- (ii) Instrumentation
- (iii) Power Systems
- (iv) Machines and Drives

Scale of pay : Rs. 700-40-1100-50-1600

Age : Not above 35 years.

(i) Age limit does not apply to the employees of this University.

(ii) Age relaxation can be considered in deserving cases.

Application forms can be had from the Director, Dept. of Publications and University Press, Osmania University, Hyderabad-7, A.P. on payment of Rs. 4.50 in person or by money order or by a postal order UNCROSSED made payable to the Director, University Press and by sending a self-addressed envelope (11½ x 26½ cms.) duly stamped for ordinary or registered post.

A latest passport size photograph should be affixed on the application form.

B. Ramachandra Reddy
REGISTRAR

SAMBALPUR UNIVERSITY

JYOTI VIHAR : BURLA

Advertisement No. 16813/CAEE

Dated 6-12-79

Application in the prescribed forms are invited for the post of Project Officer for the UGC assisted Centre of Adult Education, NAEP Unit in the University Jyoti Vihar, Burla.

Scale of pay : Rs. 700-40-900-EB-40-1100-50-1300.

The post carries usual D.A. as would be determined by the Unit from time to time.

Qualification

Master Degree in any subject securing not less than 48% of marks in the aggregate.

Desirable

Degree/Diploma on Adult Education.

Experience

Experience in Social Service, extension work. Running of Adult Education and N. F. Education Centre, Knowledge of local dialects and tribal language, experience in producing and using teaching/learning materials and visual aids.

The post is for a period of three years and may be extended further on the approval of the University Grants Commission.

Seven copies of the application forms will be supplied by the University Office, Jyoti Vihar to each intending candidate in person on cash payment of Rs. 10/-. Candidates intending to receive forms by post are required to send crossed postal order of Rs 10/- payable to the Finance Officer, Sambalpur University, Jyoti Vihar, Burla. A self-addressed envelope (23 cm x 10 cm) with postage stamp worth Rs. 3.30 p. affixed to it with the words "Application Form for Project Officer" superscribed on it.

Money Order/Cheque will not be entertained.

The last date of receipt of applications in the University Office, Jyoti Vihar, Burla, Sambalpur (Orissa) is 10th January, 1980.

J. N. Panda
REGISTRAR

THE UNIVERSITY OF BURDWAN

RAJBATI : BURDWAN

WEST BENGAL

Advertisement No. 8/79-80

Dated, 16th November, 1979

Applications in the prescribed form are invited for the post of Reader in Law in the scale of pay of Rs. 1200-50-1300-60-1900/- plus dearness and other allowances, pensionary benefits according to the rules of the University.

Department of Law :

Readership in Law ... Two posts
(Permanent)

Minimum Qualifications

1. (a) A doctor's degree or published research work of an equally high standard, and
- (b) Consistently good academic record with first or high second class (B in the seven point scale) Master's degree in Law or an equivalent degree of a foreign University.

2. Specialisation or Proficiency

Administrative Law/Taxation Law/ Interpretation of Statutes and principles of Legislation/Constitutional Law/Legal Remedies/Commercial Laws and/or any branch of procedural Laws.

The University Council may on recommendation of the appropriate Selection Committee, waive any of the requirements in view of the candidate's specialised knowledge in the subject. The choice of the Committee may not necessarily be confined to those who apply formally.

For application form and other information apply to the Registrar with a self-addressed stamped (0.40p.) envelope (9" x 4").

Last date for submission of application with the requisite fee of Rs. 5/- is 31st December, 1979.

A. K. Chaudhuri
REGISTRAR

HIMACHAL PRADESH UNIVERSITY

'Recruitment Branch'

Simla-171005.

Advertisement No. 20/79

Corrigendum

Delete "Or LL.M. (in case of teachers for the Department of Law)" mentioned for the post of Reader in the Department of Law, Advertised vide this University Advertisement No. 17/79, dated 13.11.79.

D. C. Pant
Secretary to the
Vice-Chancellor.

UTKAL UNIVERSITY BHUBANESWAR

Corrigendum to Advertisement No.

Estt. II(32-A)/28484/79

Dated 2.11.1979

The last date for receipt of application for the post of Deputy Registrar in the Utkal University is hereby extended till 24.12.1979

The candidates who had applied in response to the advertisement No. Estt. II(32)/16780/79, dt. 10-8-79 may apply afresh, if they so desire.

S. K. Panda
REGISTRAR

DIBRUGARH UNIVERSITY**DIBRUGARH: ASSAM**

Advertisement No. 8/79

Applications are invited for the following posts:

1. Professor in Statistics : One post (permanent)
2. Professor in History : One post (permanent)
3. Reader in Statistics : Two posts (permanent)
4. Reader in Sociology : Two posts (permanent)
5. Reader in Economics : One post (permanent)
6. Reader in Education : One post (permanent)
7. Lecturer in Commerce : One post (permanent) (the number is likely to be increased)
8. Lecturer in Life Sciences: Two posts (permanent)
9. Lecturer in English : One post (for the Deptt. of education) (permanent)
10. Lecturer in English : Two posts (permanent)
11. Lecturer in Applied Geology : Three posts (permanent)
12. Lecturer in Assamese : One post (against leave vacancy)
13. Lecturer in Sociology : One post (permanent)

Scale of pay

Professor : Rs. 1500-60-1800-100-2000-125/2-2500/- (Revised)

Reader : Rs. 1200-50-1300-60-1900/- (Revised)

Lecturer : Rs. 700-40-1100-50-1600/- (Revised)

All posts carry usual allowances admissible under the University rules in force from time to time and the incumbents except Sl. No. 12 will be eligible for Contributory Provident Fund and Gratuity on confirmation as per rules of the University.

Essential Qualifications**A. For Professor**

An eminent scholar with published work of high quality actively engaged in research, ten years' experience of teaching and/or research experience of guiding research at doctoral level.

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge.

B. For Reader

Good academic record with a doctoral degree or equivalent published work. Evidence of being actively engaged in (i) research (ii) innovation in teaching methods or (iii) production of teaching materials.

At least five years experience of teaching and/or research provided that at least three of these years were as Lecturer or in equivalent position.

C. For Lecturer

(a) A Doctorate Degree or research work of an equally high standard; and (b) Consistently good academic record with 1st or high 2nd class (B in the seven point scale) Master's Degree in a relevant subject or an equivalent degree of a foreign University (consistently good academic record with an M.Phil. Degree in Education in case of Lecturer in Education). Having regard to the

need for developing interdisciplinary programmes, the degrees in (a) and (b) above may be in relevant subject.

Provided that if the Selection Committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard, it may relax any of qualifications prescribed in (b) above.

Provided further that if a candidate possessing a Doctor's Degree or equivalent research work is not available or is not considered suitable a person possessing a consistently good academic record (weightage being given to M.Phil. or equivalent degree or research work of quality) may be appointed provided he has done research work for at least two years or has practical experience in a research laboratory/organisation on the conditions that he will have to obtain a Doctor's degree or give evidence of research work of equivalent high standard within five years of his appointment, failing which he will not be able to earn future increments until he fulfils those requirements.

D. Specialisation required**(i) For the post of Reader in Statistics Post No. 1**

Econometrics/Demography/Educational Statistics/Information Theory.

Post No. 2

Stochastic Processes/Statistical Inference/Experimental Design / Sample Survey.

(ii) For the post of Reader in Sociology Post No. 1

Rural Sociology or Sociology of Economics Development or Political Sociology.

Post No. 2

Industrial Sociology or Social Demography or Urban Sociology.

(iii) For the post of Reader in Economics

Industrial Economics or Economics of Education.

(iv) For the post of Reader in Education

M.Ed. or M.A. in Education with B.T./B.Ed.

(v) For the post of Lecturer in Commerce

Business Statistics & Monetary and Banking Policy.

OR

Business Statistics.

&

Law & Practice of Direct Taxes.

(vi) For the post of Lecturer in Life Sciences**Post No. 1**

The applicant must hold an M.Sc. in Zoology or Life Sciences with either of the following specialisation:

(a) Cytogenetics.

(b) Animal Physiology.

Post No. 2

M.Sc. in Botany with either of the following specialisation at Ph.D. level.

(a) Cytogenetics

OR

(b) Microbiology

(vii) For the post of Lecturer in English (For the Deptt. of English.)

(a) English language teaching with training in teaching/English as a foreign language in any Institute/

Centre of foreign language.

(b) Preferably with B.T./B.Ed. or M.Ed.

(viii) For the post of Lecturer in English.

The posts are open.

(ix) For the post of Lecturer in Applied Geology

Mineralogy and Petrology/Statistical Geology/Geological Mapping/Geological Prospecting / Economic Geology/ Engineering Geology/Mining Geology/ Mineral Technology/Mineral Economics /Petroleum Geology.

(x) For the post of Lecturer in Assamese

Assamese Literature (Group 'A')

(xi) For the post of Lecturer in Sociology.

The post is open.

Nine copies of applications for a post of Professor and seven copies of applications for a post of Reader or Lecturer in plain papers giving full bio-data including (1) Name in full (in block letters); (2) Father's name; (3) Date of birth; (4) (a) Permanent address (b) Present address (5) Present occupation, if any including name of employer; (6) Present salary drawn (if any). (7) Detailed academic career from Matriculation/Higher Secondary/High School Leaving Certificate Examination and onwards showing division/class, aggregate percentage of marks, school/college/University from which appeared (attested copies of Marksheets, Certificates should be enclosed); (8) Details of appointments held with designation, duration, nature of works and name of employers; (9) Research contributions with copies/reprints; (10) Name and address of two references not related to the candidate together with an application fee of Rs. 5/- (Rupees five) by CROSSED INDIAN POSTAL ORDER drawn in favour of the Registrar, Dibrugarh University, should be sent in an inner sealed cover superscribed "Application for the post of (Name of the post applied for), Advertisement No. 8/79 enclosed in an outer cover addressed to the Registrar-in-Charge, Dibrugarh University, Dibrugarh to reach him not later than 17th January, 1980.

The number of this advertisement and name of the post applied for must be referred to in the application. Persons in employment should apply through proper channel or with a 'No objection certificate' from the present employer. All reprints of the research papers published must be attached. Those who had already applied for the posts no. 2 & 3 need not apply again, but their applications will be considered.

Applications not in conformity with the above requirements will not be entertained.

Candidates will be required to appear at an interview if and when called for. Canvassing directly or indirectly will disqualify a candidate. Candidates called for interview will be given actual Railway fare according to the rules of this University.

D. Pathak**REGISTRAR-IN-CHARGE**

